WEST
ARKETING
ISSUE
Pages 9-20

Croplife®

TOTAL CIRCULATION
OVER 9,070 COPIES
EACH WEEK
BPA Member, Business Publications Audit

WEEKLY NEWSPAPER FOR THE FARM CHEMICAL MANUFACTURER, FORMULATOR AND DEALER

Published by The Miller Publishing Co., Minneapolis, Minn.

4 | Accepted as Controlled Circulation Publication at Minneapolis, Minn. | JANUARY 14, 1957 | Subscription Rates: $5 for 1 year, $9 for 2 years | No. 2

INDUSTRY WEEK

pothecaries Hall, Rogers & Hubbard, oodruff and Old Deerfield in Merger

ATERBURY, CONN. — An- cement has been made of the ger, effective Jan. 1, of four New and chemical and fertilizer com- es doing business throughout the theast.

he companies involved are othecaries Hall Co. of Water- y, Conn., the Rogers & Hub- d Co. of Portland, Conn., the odruff Fertilizer & Chemical rks, Inc., North Haven, Conn. and the Old Deerfield Fertilizer Company of South Deerfield, Mass.

The merger agreement, which had previously been approved by the directors of the four companies, was approved by the stockholders of the respective companies at meetings held Dec. 28.

The name of Apothecaries Hall Co., which is the surviving corporation, has been changed to the Hubbard-

(Continued on page 21)

ew Seattle Firm to Specialize in Trace ement Fertilizers, Garden Plantfoods

EATTLE—The newly formed Pa- Agro Co. began business here 2, with a new line of products Pacific Northwest farmers and ieners.

resident of the new concern is R. Cool of Tonasket, Wash., where heads Agro Minerals, Inc., manu- urers of gypsum and epsom salts. ert H. Allard, formerly with Wil- Ellis Co., is vice president and general manager, and has direct charge of the farm chemical division. Lee Fryer, previously with Chas. H. Lilly Co., is vice president and manager of the plantfoods division.

Pacific Agro Co. is specializing in trace element fertilizers and home garden plantfoods. Among the farm crops for which the firm will produce specialized fertilizers are hops, ap-

(Continued on page 24)

amond Black Leaf Co. Begins Major xpansion Program at Des Moines Plant

ES MOINES—A major modern- on-improvement program at Dia- l Black Leaf Co.'s agricultural icals plant in Des Moines has announced here by Emil C. Ger- midwest manager for the com-

addition to doubling production city of the plant, the project will le the company to intensify and den its customer service activi- n a 16-state area for Black Leaf icides, weed killers and brush rol chemicals produced at the t, Mr. Gerdes said.

arehouse facilities for handling raw materials required to formulate weed and brush killers and for storage of finished products are being enlarged. The plan includes construction of a concrete building providing 6,000 square feet of floor space, and eight storage tanks with a combined capacity of 150,000 gallons. The project also calls for installation of new and improved formulating, reactor, packaging and power-handling equipment.

The expansion program, the first at the Des Moines plant since its acquisition by Diamond Black Leaf in November, 1955, is expected to be completed by Feb. 15.

sons to Build New Nitric Acid Plant

ELIXSTOWE, ENGLAND — Fis- Ltd., manufacturer of fertilizer chemicals, has announced the rd of a contract to Chemical and ustrial International, Ltd. of Nas- Bahamas for the construction of 50 ton per day nitric acid plant to built at Fisons facilities at Stan- l-le-Hope on the Thames estuary. he plant was designed by the mical and Industrial Corp. of Cincinnati, Ohio and will be constructed by Chemical and Industrial International, Ltd., which has the right to license C&I processes outside of the United States and Canada.

This is a single unit high pressure nitric acid plant and is the second plant of this type furnished recently in Europe where for many years the atmospheric type nitric acid plant has been used.

.S. Steel Taking Orders From Utah Plant

ALT LAKE CITY—United States el Corp. has announced that or- s are now being accepted for an- rous ammonia and prilled am- ium nitrate for shipment January, 7 and later from its new ammonia nt at Geneva, Utah. The new plant capacity to produce 70,000 tons anhydrous ammonia, and 68,000 tons of prilled ammonium nitrate per year.

Also announced, effective 12:01 a.m., Jan. 1, 1957, were its f.o.b. Geneva, Utah prices of $88 per net ton for USS anhydrous ammonia, and $70 per net ton in 80-lb. bags and $66 per net ton in bulk for USS prilled ammonium nitrate.

Hoppers, Alfalfa Aphids Pose Biggest Threat in Iowa

AMES, IOWA — Grasshoppers and spotted alfalfa aphids are the insects expected to pose the biggest threats to Iowa crops in 1957, Harold Gunderson and John Lilly, Iowa State College entomologists, said last week.

The grasshopper infestation is expected to be moderately heavy for the entire state if there is a normal spring. A comparatively dry spring would boost hopper numbers even more.

The spotted alfalfa aphid, Iowa's newest pest, was found all over the state last fall. While it is not known if the insect can survive an Iowa winter, the entomologists said that even if the present population winter kills a new crop likely will be wind-borne into the state from the South during the 1957 growing season.

Other insects expected to be abundant again in 1957 include blister beetles and corn borers. Last year adult blister beetles were so prevalent in some Iowa fields that cattle refused to eat fresh-chopped forage from these fields. Corn borer infestations are expected to be moderately heavy over the entire state.

Mr. Gunderson and Mr. Lilly said that chemical control in 1957 can and should change the picture for some of the more destructive pests, even more than it has in the past. Soil insecticides, for example, have been used on about 1 acre out of every 8 planted to corn in the past 2 years, they said.

Sugar Beet Acreage Allocation Increased

WASHINGTON—The U.S. Department of Agriculture has announced that the national acreage limitation for 1957-crop sugar beets has been increased from 885,000 acres to 932,000 acres, or a total increase of 47,000 acres.

FDA Sets Tolerance For Ethylene Dibromide

WASHINGTON—Food & Drug Administration has announced a tolerance of 10 parts per million for residues of inorganic bromides (calculated as Br) in or on cantaloups and litchi nuts that have been fumigated with ethylene dibromide in accordance with the Mediterranean fruit fly control program or the USDA quarantine program.

Inside You'll Find

Trade Marks	7
Over the Counter	9
Field Notes	9
What's New	10
Oscar and Pat	19
Bug of the Week	20
Editorials	26
Meeting Memos	27
Index of Advertisers	27

Congress Asked To Check Costs Of TVA Output

Bill Would Have Survey Made on Its Fertilizer Prices

WASHINGTON, D.C.—A proposal for a Congressional examination of actual costs involved in the manufacture of fertilizers by the Tennessee Valley Authority, has been introduced in the House of the 85th Congress by Bruce Alger (R., Texas). The measure would have a Congressional survey conducted to determine three main points:

1. What are the real costs of production of fertilizer to TVA?

2. To determine the real cost factors, direct and indirect, that should be taken into account in reaching a price for the fertilizer material.

3. The approximate annual amount of taxes which would be obtainable if the fertilizer production facilities were owned by private enterprise.

The method through which Congressman Alger would work to make these determinations would be through the facilities of the Comptroller General. On the basis of this report by the general accounting office, TVA would be required by the Alger measure to set its cost of by-product fertilizer materials to reflect the cost factors determined by the general accounting office as outlined in the Alger bill. The bill provided further that such prices charged by TVA for its by-product fertilizer materials should not be less than all the real costs of production as the survey would require.

This bill has been referred to the House Committee on Governmental Operations, but Capitol observers say this can hardly be construed as a body favorable to such a measure. It is therefore considered unlikely that except for outside heavy pressure, it would ever get to a stage of hearings by this Committee.

Over 2 Million Acres of Timber Treated in 1956

WASHINGTON—The Forest Service spearheaded a fight against insects and tree diseases on more than 2 million acres of forest land in 1956, the U.S. Department of Agriculture announced Jan. 8.

Working with the Forest Service on these jobs were the Department of the Interior, state forestry agencies and private landowners. Together, they treated 692,798 acres

(Continued on page 24)

AT PFIZER SEMINAR—Dr. S. H. Wittwer, center, Michigan State University, is shown at a recent Chas. G. Pfizer & Co. research seminar discussing some details of his gibberellin investigations with two Pfizer research scientists. They are Dr. F. W. Tanner, left, who moderated the research seminar, and Dr. L. G. Nickell, who recently perfected a technique for propagating single cells of higher plants in test tubes.

Pfizer Offers Research Quantities to Broaden Gibberellin Investigation

NEW YORK—Chas. Pfizer & Co., Inc., has announced that it is offering research quantities of new growth regulatory substances known as gibberellins to a limited number of investigators.

The firm's commercial development department stated that the move was designed to supplement Pfizer's own research in the field and stimulate further evaluation of these products. Experimental evidence to date indicates that gibberellins, when sprayed on plants or trees, result in a doubling and even tripling of linear growth within a few weeks, the firm stated.

The substances, which are produced by fermentation methods, and the name "gibberellins" are derived from gibberella fujikuroi, an organism causing elongation of rice shoots, first observed by Japanese researchers almost three decades ago. This reaction is characteristic of what the Japanese called "Bakanae" or "foolish seedling" disease, which stimulated their investigations.

A noted researcher in this field, Dr. S. H. Wittwer of Michigan State University, recently climaxed the fall series of research seminars held at Pfizer headquarters in Brooklyn, by giving his audience a glimpse into the potentials of gibberellins.

While most of Dr. Wittwer's work with gibberellins has been confined to leading vegetable crops, there is evidence that the compounds may also apply to the entire plant kingdom.

Dr. Wittwer's studies with gibberellins have revealed outstanding growth effects. Extensive greenhouse testing has shown plant growth promotion to be almost universal with these materials. In addition, there is evidence that gibberellins will also promote the early maturation of some slow-growing plants.

In some types, blossoming occurred much earlier than in untreated plants. Profuse blossoming has been induced even in certain varieties in which blossom set is normally difficult. Although much of the data obtained until now has been too incomplete for final conclusions, the results do show that gibberellins may hold promise for significant application in American agriculture, Mr. Pfizer said.

ONION MARKETING ORDER

PORTLAND, ORE. — A proposed marketing agreement and order for onions grown in Oregon's Malheur County and southwestern Idaho recently went into effect following a growers vote, according to Robert H. Eaton, in charge of northwest U. S. Department of Agriculture fruit and vegetable division marketing office. The main regulatory feature of the program is the authority to regulate onion shipments by grade and size and to set shipping holidays not to exceed four days in length.

REMEMBER TO ORDER
CHASE BAGS
There's None Better!

Small Minority Decides U.S. Support Program for Corn, Economist Declares

URBANA, ILL.—It appears that corn growers will have a government program that has been approved by the action of only 10% of the growers eligible to vote in the recent referendum.

This is pointed out by Prof. L. H. Simerl, agricultural economist at the University of Illinois.

There were only about 163,000 votes for acreage allotments—the support program which will be in effect on the next crop—and it is estimated that the number of persons in the commercial corn area eligible to vote was at least 10 times as many as voted for allotments.

The results of the corn referendum are worthy of serious study and comment, Prof. Simerl said in a recent market letter.

"The first fact to be noted," he said, "is that the result of the voting was almost completely mis-reported. Most of the reports from Washington stated that corn producers had approved acreage allotments. The fact is, however, that less than 39% of the farmers who voted approved acreage allotments. More than 61% voted for the base acreage program. Thus, three farmers voted for base acreages for every two who voted for allotments. It is therefore misleading to say either that corn growers approved acreage allotments or that they disapproved base acreages."

Congress, in the soil bank act passed last spring, specified that a two-thirds majority would be required for base acreages to replace acreage allotments, Prof. Simerl explained. The argument some congressmen used to support the two-thirds requirement was that marketing quotas for wheat and cotton required a two-thirds majority to put them into effect and that the same requirement should apply to base acreages for corn.

"Marketing quotas, however, are very different from base acreages," Prof. Simerl noted. "Compliance with marketing quotas on wheat and cotton is mandatory. Farmers who grow acreages of these crops in excess of their marketing quotas not only lose the price support privilege, but also must pay substantial fines. These fines are so steep that practically no wheat growers plant more than their allotments. Where such compulsion is involved, it may be appropriate to require a two-thirds majority of the voting farmers.

"By contrast, compliance with base acreages for corn would have been voluntary, the same as compliance with acreage allotments. The only penalty for non-compliance with either base acreages or acreage allotments was loss of the price support privilege. There seems to be no adequate justification for requiring a two-thirds majority for base acreages and only one-third for acreage allotments.

10% Approve

"There were only 163,227 unchallenged votes for acreage allotments. No one knows exactly how many persons were eligible to vote, but the number apparently was at least 10 times as many as voted for allotments. Thus corn growers now have a program that has been approv by the action of only 10% of t growers."

Farmers in 24 states voted in t corn referendum. These states a the percentage of votes for acrea allotments for corn were as follow

West Virginia, 5.1%; Delawa 11.6; Kentucky, 12.7; Tennessee, 13 Georgia, 14.7; Alabama, 17.4; N Jersey, 19.0; Illinois, 19.5; Nor Carolina, 21.4; Michigan, 24.9; In ana, 25.4; Pennsylvania, 26.2; Oh 28.9; Maryland, 33.1; Iowa, 40 Arkansas, 40.8; Wisconsin; 45 Kansas, 48.6; Virginia, 49.3; Nebra ka, 50.8; Missouri, 53.7; North D kota, 72.5; South Dakota, 72.9; a Minnesota, 76.5.

Only One-Fourth Voted

"At least three-fourths of the co producers did not vote either way Prof. Simerl said. "Why? Some d not vote because they did not unde stand the two propositions. We su pect, however, that most of those wh did not vote had little faith in, or co cern about, either program."

Sterling Drug Acquires d-Con Co

NEW YORK — Sterling Drug In has acquired the d-Con Co., Chicag manufacturer of rodenticides, in cash transaction involving purchase its inventory of finished products a good will, it was announced here r cently by James Hill, Jr., Sterling chairman of the board.

The d-Con Co. has been dissolv and reorganized by Sterling und the same name. Present plans call f removal of the executive and sal offices from Chicago to Sterling headquarters building at 1450 Broa way, New York, sometime in th spring.

Mr. Hill said that the d-Con li of products will be manufactured a new plant now under constructio in Alliance, Ohio. Pending start plant operations there about mi 1957, production will continue at th present d-Con plant in Chicago.

Frank A. Corbet, a divisional vi president of Sterling's Nationa Brands Division, has been elect president of the d-Con Co. Assistin him in a consulting capacity is Jerom S. Garland, former president d-Con. Herman A. Fellman, assistan manager of chain store sales f Sterling, has been appointed region manager in charge of Pacific Coa operations.

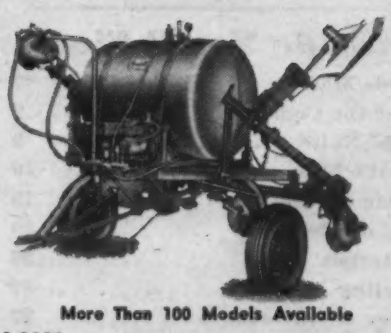
Sterling Drug is the parent com pany of John Puhl Products Co. an of Sterling Chemicals Inc. Puhl make household and cleaning product Sterwin produces chemicals for th feed, baking, milling and food pro cessing industries.

Allan J. Greene Promoted by Pfizer

NEW YORK—Allan J. Greene h been elected to the newly-create post of administrative vice preside and a member of the executive com mittee of Chas. Pfizer & Co., Inc., th firm announced Jan. 4.

Mr. Greene, who has been wit Pfizer for 18 years, has been direct of commercial development sinc 1954. He was elected to the board directors in 1955.

A graduate of Yale Universi where he received a B.S. in chemic engineering in 1938, Mr. Greene joi ed Pfizer upon his graduation an has been with the company during h entire business career. He held a num ber of positions in the production de partment and was appointed gener production manager in 1949.

AQUA AMMONIA APPLICATORS
CHOOSE FROM THE Complete Broyhill ® LINE
the name that means CUSTOM QUALITY
Whether you're a commercial applicator, manufacturer, or individual user, there's a quality Broyhill tank and sprayer in a size, mount, and design to fill your needs. *Either knives or discs available.*
TRAILER, TRACTOR, TRUCK OR SADDLE MOUNTED
FOR FREE CATALOG, WRITE
THE BROYHILL COMPANY, DAKOTA CITY, NEBRASKA

More Than 100 Models Available

FOR FAST ACTION AND RESULTS try Croplife's CLASSIFIED ADVERTISING

African Pyrethrum

It's a fact Insects are not resistant to Pyrethrum

PYRETHRUM, harmless to human and animal life, is

Unsurpassed in Quick Knock-Down

Economy in Concentration With Synergists

Rapid Dispersal High Penetration

PYRETHRUM offers highest protection for

Tobacco Storage

Home Aerosols and Sprays

Poultry Houses

Food-Meat Packers

Ship's Holds

Granaries and Flour Mills

TO: AFRICAN PYRETHRUM DEVELOPMENT, INC. 8
65 Pine Street, New York 5, N.Y.

Please send me__copies of free booklet, Pyrethrum Facts.

NAME_____

NO. ST._____

CITY_____ STATE_____

P.Y.R

AFRICAN PYRETHRUM

Cotton States Branch Of ESA to Meet in Birmingham Feb. 4-6

BIRMINGHAM — The 31st annual meeting of the Cotton States Branch, Entomological Society of America, will be held at the Dinkler-Tutwiler Hotel in Birmingham, Feb. 4-6, according to Dr. A. N. Tissot, University of Florida, branch chairman. The meeting this year will be held in connection with the Association of Southern Agricultural Workers.

L. C. Murphree of Starkville, Miss., is program chairman. The first day of the meeting will include an address by Dr. H. M. Armitage of Sacramento, Cal., who is president of the Entomological Society of America. Dr. Tissot will deliver the address of the branch chairman.

An important item of business will be the report on the constitution and by-laws for the Cotton States Branch. A committee headed by Dr. J. H. Cochran of Clemson College has presented a proposed constitution to the membership for ballot.

Other features of the first day of the meeting will be a report by Dr. V. M. Kirk of Florence, S.C., on the Tenth International Congress of Entomology which was held last summer in Montreal, Canada, and a series of papers on the control of houseflies, hornflies, chiggers and insects of peanuts and vegetables. O. I. Snapp, U.S. Department of Agriculture, Fort Valley, Ga., will report on experiments on the control of plum curculio on peaches with soil treatments. Reports on the cyst nematode and the burrowing nematode will also be presented.

A symposium on recent insect invaders, led by Dr. J. T. Creighton, University of Florida, will be a feature of the program Feb. 5. The symposium will feature the status of the European corn borer, pepper maggot, white-fringed beetle and the Mediterranean fruit fly in the South. The Feb. 5 morning session will also feature an address by Frank Holland, manager of the Florida Agricultural Research Institute.

The Feb. 5 afternoon program will begin with an invitational paper by Dr. J. S. Roussel of Louisiana Agricultural Experiment Station on boll weevil resistance to chlorinated hydrocarbon insecticides. Following this paper the entomologists will split into two sections, one for a group of papers on cotton insects and another on corn insects. A hospitality hour and banquet will be given in the evening.

The Shell Chemical Corp. film, "The Rival World" will be shown the morning of Feb. 6 after which the meeting will split into two sections for research reports. One section will deal with researches on mosquitoes, tobacco insects and pests of ornamentals and forests. A report on a study by the National Research Council of protection against decay and termites in residential construction will be given by R. J. Kowal of the USDA Forest Service at Asheville, N.C. The other section will feature reports o cotton insects. A talk will be give by Gordon Barnes of Fayettevill Ark., on the influence of education growers on boll weevil control.

Members of the program commi tee are L. C. Murphree; Hamilto Laudani, Savannah, Ga.; H. Eldo Scott, Raleigh, N.C.; J. W. Wilso Sanford, Fla.; Vernon Kirk, Florenc S.C., and J. E. Zeigler, Millbrook, Al

G. R. Williamson, Agricultur Chemical Service Co., Montgomer Ala., is chairman of the local com mittee on arrangements. Other mem bers of that committee are N. Downey, Hercules Powder Co., Bi mingham, and J. E. Zeigler, Velsic Corp., Millbrook, Ala.

Copies of the program are availabl from W. G. Eden, secretary-treasure of the branch, Auburn, Ala.

Southern Phosphate Promotes Jack D. Lee, Charles B. Compton

SAVANNAH, GA. — Jack D. Le and Charles B. Compton have bee named vice presidents of Souther States Phosphate & Fertilizer Co according to an announcement by F R. Dulany, president of the firm.

Mr. Lee was appointed vice presi dent in charge of manufacturing an Mr. Compton vice president in charg of sales.

Mr. Lee received his B.S. degree in chemistry from the University o Georgia and served with the navy during World War II and the Korean conflict. He has been with the firm six years and has been superintendent the past 18 months.

Mr. Compton has been with the company four years and was sales manager at the time of his promotion to vice president. He was in the in surance business in Savannah before army service.

Mr. Dulany said that the promotions were in line with a company policy formulated several years ago of advancing young executives to positions of responsibility in the firm. Average age of the executives of the company is about 30, he said.

Other officers of the company are W. Howard Read, vice president, and Mrs. Thomas L. Lovett, secretary.

Southern States Phosphate & Fertilizer Co. operates a big plant here where it manufactures sulfuric acid superphosphate and mixed fertilizer.

No Soybean Nematode In Michigan Yet

EAST LANSING, MICH. — The soybean nematode, menacing the east coast soybean crop, has not appeared in Michigan yet, but Michigan farmers are warned to know the symptoms. John Knierim, Michigan State University entomologist, urges farmers to watch next season for a yellowing of the plant and dwarfing.

Mr. Knierim points out it is difficult to check the spread of the soybean nematode, which appeared first in North Carolina in 1954. He points out that anything that will pick up dirt, such as a man's shoes, can spread the tiny organisms, or they can be blown by the wind.

The soybean industry, reports Mr. Knierim, is pinning its hopes on fumigation and on resistant strains of soybeans.

2 Counties Removed from Medfly Regulated Area

WASHINGTON—Restrictions now affecting the interstate movement of fruits, vegetables and other articles regulated under the Mediterranean fruit fly quarantine were revoked in Collier and Hendry counties, Florida, Jan. 9. Florida counties remaining under regulation are Broward, Dade, Lee and Pinellas. Eradication of the Medfly was accomplished in the two released counties largely by means of airplane-applied poison-bait sprays.

Rip-p-p ...and it's open!

Bemis Ripp-Nipp* Bag

Grasp tape here

TO OPEN Pull up Sharply!

Give your customers the time- and labor-saving benefits of Bemis RIPP-NIPP* in Bemis Multiwall Bags. They'll thank you for it...and RIPP-NIPP costs you nothing extra.

Get the details from your Bemis Man.

RIPP-NIPP—A small, closely controlled, machine-made nip cut in the bag at the edge near the sewn seam to start easy tear along the top. Does not weaken the bag.

*Trade-mark

Bemis

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

Vegetable Acreage Up Despite Fewer Farms, Census Says

WASHINGTON — The number of farms producing vegetables for commercial sale is shrinking, according to the U.S. Bureau of the Census.

In its latest report the bureau reveals that in 1954—except for potatoes and sweet potatoes—there were 79,606 farms reporting to it for vegetables harvested for commercial market.

It is significant that this report, while showing a reduction in total number of farms reporting acreage, reveals that the total acreage of vegetables harvested is larger in 1954 than in 1949.

For 1954 harvested acreage of vegetables was estimated at 3,739,894 acres with a value of 654.1 million dollars.

The bureau noted that in 1954 5.8% of all farms reported vegetables harvested for sale as compared with 4% in 1949.

The Census Bureau sample of 3,-5,679 farms reporting harvested vegetables for home use in 1954 was the smallest number reporting in any census. Farms reporting vegetables grown for home use in 1954 was estimated by the bureau at 67.9% as compared with 71% in 1949.

Statewide farms reporting to the government for commercial sale varied from 23% in Delaware and 2.5% in New Jersey to less than 1% in the Dakotas.

Clarence A. Stiegman Named Head of Product Development at Hooker

NIAGARA FALLS, N.Y. — Dr. Clarence A. Stiegman has been named director of product development of Hooker Electrochemical Co., Niagara Falls, N.Y., it is announced by Robert E. Wilkin, vice president and director of sales.

In this capacity Dr. Stiegman will direct product development of both the chemical and plastics elements of Hooker's business. He was vice president and technical director of Oldbury Electro-Chemical Co. prior to its consolidation into Hooker on Nov. 29.

Dr. Stiegman came to Oldbury in 1937 as technical assistant to the production manager, and has served as manager of new product development, assistant secretary, secretary and manager of technical sales service. In 1950 he was elected to the board of directors and was also appointed director of technical service. Since 1953 and until the consolidation, he was vice president and technical director.

Aphid in Nevada

RENO, NEV. — Whether or not the spotted alfalfa aphid will overwinter in Nevada is still a question, Robert W. Lauderdale, extension entomologist, Max C. Fleischmann College of Agriculture, University of Nevada, said recently. The pest migrated into the major alfalfa growing regions of the state last year, and large numbers of young aphids were found to be alive well into late November, Mr. Lauderdale said.

MAN OF THE YEAR

BATON ROUGE—Dr. M. B. Sturgis, head of the Louisiana State University agronomy department, has been named "man of the year in Louisiana agriculture" by the Progressive Farmer. Dr. Sturgis is known for his pioneer work in the development of a rice-pasture rotation program in southwestern Louisiana and for his activity in the establishment of a state soil testing program.

Texas Sales in First Six Months Show Little Change

COLLEGE STATION, TEXAS — Total fertilizer tonnage sold in Texas during the spring of 1956 was about the same as during that period in 1954 and 1955. Tonnage of mixed goods sold in the first six months of 1956 was 5% less than a year ago, according to J. F. Fudge, state chemist, but sales of materials were about 5% higher.

Highly significant decreases occurred in sales of all grades without nitrogen, Mr. Fudge said, indicating increased availability of nitrogen materials. Grades of high-analysis 1-2-1 ratio accounted for two thirds of the mixed goods tonnage and 1-1-1 grades composed one eighth of the total.

Mr. Fudge said the trend toward higher analysis fertilizers is still on the upgrade. Sales of the 5-10-5 grade were 20,000 tons lower than those of 1952 while high analysis sales have climbed 24,000 tons in a five year period.

Amount of nitrogen sold was up 6,000 tons from the same period last year and is over twice as high as in 1952. Sale of normal and concentrated super-phosphate was about the same as in 1955, but showed a slump of two thirds from 1952 sales. Significant increases were noted in tonnages of anhydrous ammonia, urea and ammonium phosphates.

East Texas used slightly over one half of the nitrogen, available phosphoric acid and potash in mixed goods. East Texas also accounted for 50% of the 1-2-1 goods and 55% of the 1-1-1 goods sold. West Texas used two thirds of the total tonnage of anhydrous ammonium sulfate and 16-20-0, and two thirds of the rock phosphates.

Average composition of all mixed goods sold in the state was approximately a 7-14-7 grade and the average percentage of nitrogen in all fertilizers increased from 8.52 in 1951 to 16.74 this year.

Arthur B. Tillman In New Diamond Post

CLEVELAND—Arthur B. Tillman, assistant works manager—operations of the Painesville, Ohio plant of Diamond Alkali Co., Cleveland, since August, 1955, has been promoted to the newly-created position of electro chemicals division operations manager, it was announced here by Frank Chrencik, general manager of the division.

Mr. Tillman's appointment, he said, marks the latest step forward in Diamond's nationwide divisionalization program, which was started in 1954.

At his new post, Mr. Tillman, a veteran of more than 20 years' experience with the company, will hold responsibility for operations at Diamond electrolytic chlorine-caustic soda plants in Painesville; Houston, Texas; Pine Bluff, Ark.; Muscle Shoals, Ala., and Edgewood, Md.

PHOTO COURTESY WESTERN GROWERS ASSN.

TRONA® POTASH *for Agriculture*

In 1917 state fairs were awarding prizes for outstanding farm products just as they are today. Then as now, growers depended on Trona® MURIATE OF POTASH for high quality crops. For it was in 1917 that Trona, first to produce domestic Potash when World War I pinched off foreign sources, shipped the first trainload to the east coast. Since that time, even with American Potash and Chemical Corporation's broad diversification program, Trona is still one of the primary basic suppliers of high grade Muriate and Sulphate of Potash for Agriculture.

PRODUCERS OF—

BORAX	BROMINE
POTASH	CHLORATES
SODA ASH	PERCHLORATES
SALT CAKE	MANGANESE DIOXIDE
LITHIUM	

—and a diversified line of specialized agricultural and refrigerant chemicals

MURIATE of POTASH, agricultural grades 95-98% KCL, (60% K_2O minimum), regular and granular.
SULPHATE of POTASH, agricultural grade, 95-98% K_2SO_4 (51% K_2O minimum).

TRONA

American Potash & Chemical Corporation

Offices • 3030 West Sixth Street, Los Angeles 54, California
99 Park Avenue, New York 16, New York
214 Walton Building, Atlanta 3, Georgia

Plants • Trona and Los Angeles, California; Henderson, Nevada
San Antonio, Texas (American Lithium Chemicals, Inc.)

Export Division • 99 Park Avenue, New York 16, New York

Fertilizer Executive Declares in Favor of NPK; Says Industry Can't Afford to Stand Still on Plateau

By Samuel L. Nevins*
Vice President, Olin Mathieson Chemical Corp.
Plant Food Division
Little Rock, Ark.

Once a by-products or waste-products industry, the manufacture of plant food has long since become a major chemical industry. Nevertheless, its greatest expansion and technological progress are yet to be realized.

In view of this opportunity and challenge, I urge all segments of the industry to support state fertilizer control officials and scientific groups in their efforts to modernize fertilizer control laws.

We can continue as private enterprises only to the extent that we serve the American farmer. We cannot long exist as an industry and remain standing on today's plateau.

The way is open to us to increase our usefulness to the farmer. At the same time, every person engaged in this industry will benefit—basic chemical and fertilizer manufacturers, mixers, distributors, and dealers.

I am concerned specifically at this time with the resolution adopted by the Association of American Fertilizer Control Officials at their meeting in Washington, D.C. on October 19, 1956. This resolution proposes that the phosphorus and potassium contents of fertilizers be reported in the elemental forms.

In addition to the Association of American Fertilizer Control Officials, the following organizations have endorsed the changes: Soil Science Society of America, American Society of Agronomy, National Soil Research Committee, Experiment Station Directors Associations of the Western Regions, Experiment Station Directors Associations of the North Central Region, and Association of Southern Feed and Fertilizer Control Officials. A survey conducted among all extension agronomists and horticulturists throughout the United States favored the changes three to one.

Current practice requiring these ingredients to be expressed as oxides dates back to the early days of the fertilizer industry when it was believed that the elements occurred in the form of oxides. Later it was found that the elements actually occur in the form of their salts. Since these salts can be of various types, scientists have long since been trying to effect the change from the oxides to the elements.

To continue this out-dated useage is to hoodwink the farmer by making the analysis appear bigger than it does when expressed wholly as elements. Condoning this kind of farm malarkey is not becoming to our industry, to our way of life, nor to any of us as individuals.

Changes should have been made more than a quarter of a century ago, when they were first seriously discussed. They must be made today. Putting it off in order to preserve the status quo can only prolong the inevitable. It can only tend to obscure the farmers' understanding of what he is buying.

You know, as well as I do, of dozens of industries which have had to face similar decisions. The phonograph, bicycle, and soap industries prosper today because they embraced, not because they blocked, progress.

I am convinced the changeover from oxides to elements will be made, whether now or later. Obtaining legislative approval of the changes in all states before the 1960 deadline proposed by control officials will be expedited if industry joins with the impressive host of agricultural groups who already have endorsed the proposals.

The major objection to the changeover has been that it will create confusion. This objection appears to be nothing more than the normal human resistance to change, the same as resistance to high analysis versus regular grades was experienced. The proposals in fact are a move toward simplification that will eliminate confusion.

There was negligible confusion when the requirement for expressing nitrogen was changed from NH_3 to N. There is no confusion regarding secondary and minor elements, which are expressed in their elemental form.

If the argument is that the farmer will be confused, let us not underestimate his intelligence. If he can absorb and use very technical information on pesticides and veterinary medicines, as he now must do, a change to simpler terminology in fertilizer formulas should not challenge him.

If we ask ourselves honestly, "whose advice does the farmer really take?" we must admit in most cases he will follow the recommendations of the very group of scientists who are recommending these changes. The research work of these scientists running into millions of dollars annually, provided by the taxpayers, is further enhanced by grants in aid from our industry. Can we criticize the farmers for not following their advice and at the same time turn about ourselves and disregard their suggestions?

It is true that an educational campaign will have to be undertaken by officials and agronomists to inform the farmer regarding the changes, once they are made. Industry will join in that campaign, which I do not believe will be either long or difficult.

In fact, such a campaign will increase the farmers' awareness of his need for fertilizer. The industry stands to benefit. I predict that fertilizer manufacturers will experience the greatest boom in sales in their history once the confusion of outdated labeling practices is eliminated. The very change itself will focus attention favorably on the products of our industry, and alert the farmer to his real needs.

Contrary to apprehension that appears to be voiced by some opponents to these changes, there will be no raw material or manufacturing problems which do not already exist. Actual formulations would remain just as they are, with only slight changes up or down to eliminate fractions. New lists of approved grades can always be expected.

There is no reason for price increases based on the changeover. All ingredients will be the same, cost the same per unit, and should sell for the same unit price. Conversion costs are unchanged. It is completely practical to make these changes now.

The changes will simplify the teaching of fertilizer technology by eliminating the present difficulty of explaining the meanings of grades and ratios.

Unanimous and hearty support of these proposals is important to the industry's growth and development. Industry stands to gain so appreciably that I am surprised such support has not come spontaneously. Moreover, the results of these changes will benefit the farmer, and therefore the nation. I urge all industry people to reexamine the advantages of supporting these proposals. I urge that industry-wide approval to the proposals be expressed, thereby giving a vote of confidence to those scientific agricultural leaders who, with the best interests of the farmers at heart, are recommending these logical changes in nomenclature.

*Text of statement addressed to the fertilizer industry Jan. 3, 1957.

NEW IN '57"
ANOTHER MEMBER OF THE TEEJET
SPRAY NOZZLE FAMILY
TeeValve
● For unequalled selective spray control in boom spraying. Exclusive design permits choice of setting with valve in "Off" position. Saves chemicals . . . easier to use. Outlet for spray guns. Write for Bulletin 84.
plus FAMOUS TEEJET SPRAY NOZZLES
with interchangeable orifice tips.
Write for Catalog 30.
SPRAYING SYSTEMS CO.
3214 RANDOLPH ST. • BELLWOOD, ILL.
WORLD'S LEADING DESIGNERS AND PRODUCERS OF FARM SPRAY NOZZLES

Roland H. Lawrence, Jr.

Aerial Firm Completes Range Fertilizer Project

SAN JOSE, CAL.—L. P. Dusters of San Jose recently completed one of the largest range fertilization projects in Santa Clara County, California, when it spread 60 tons of fertilizer on Bechtel Corporation Ranch in a race with skies threatening the project with rain.

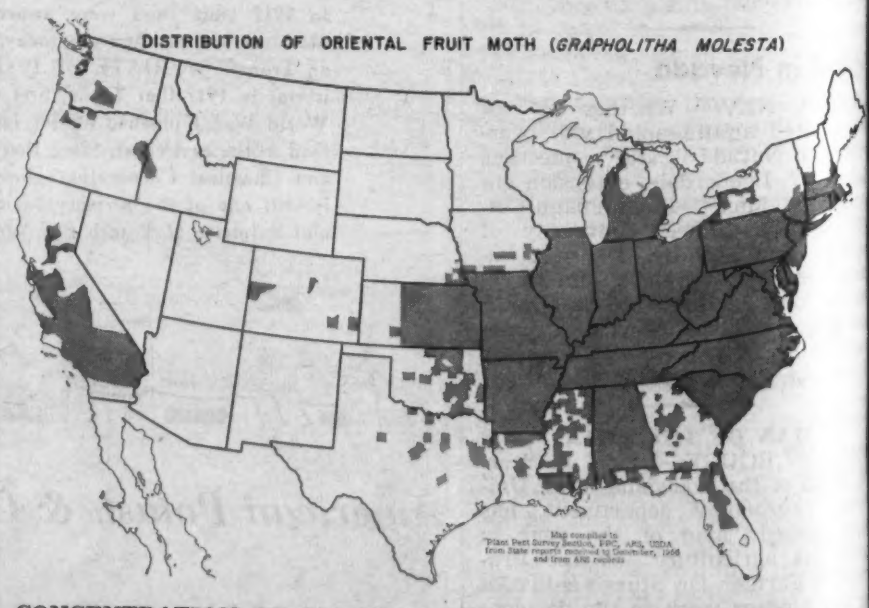
Four hundred pounds of fertilizer was put on open and grassy range land. The Loma Prieta Soil Conservation District and the California Agricultural Extension Service cooperated in planning the fertilization program.

Although forced to takeoff downwind because of terrain, pilots Wes Lenerville and L. P. owner Roland H. Lawrence, Jr., managed to apply 500 lb. of fertilizer every three and one half to four minutes when winds and weather permitted operations.

L. P. Dusters is in its fourth year of operation and specializes in aerial fertilization. Mr. Lawrence has installed special loading equipment of his own design on the truck used in the operation. The hopper slides up and down rails and is electrically operated by a generator attached to the truck motor. The hopper is of galvanized iron and has a capacity of 800 pounds.

Mr. Lawrence uses light Piper Cub aircraft operated from strips on the farmers' land. Since fertilization costs are determined by flying hours, this reduces farmers' expenses, he said.

Mr. Lawrence will fly anywhere in the state where a project of over 200 acres is involved. So far, he reports application rates on previous jobs have been from one half to one cent per pound of fertilizer applied.



CONCENTRATION OF ORIENTAL FRUIT MOTH—The above map compiled in the Plant Pest Control Section, Agricultural Research Service, U.S. Department of Agriculture, shows distribution of Oriental fruit moth as indicated from state reports received to December, 1956, and from ARS records.

eration of Grain Gives Opportunity r Better Storage, Insect Control

ANSAS CITY—Aeration of at shows great possibilities for ting favorable storage conditions better insect control, Gerald e, agricultural engineer of the Department of Agriculture, told National Grain Sanitation Con- nce here. This system will keep n in condition and avoid damage rade that sometimes results from repeated turning of customary age procedures, Mr. Kline said. r. Kline defined aeration as "the vement of small volumes of air ough stored grain to maintain its lity." Aeration differs from dry- he said, because it is not an rt to remove moisture, although sometimes happens, and because ses air flow rates which are only mall fraction of those commonly ciated with the drying process.

System Described

typical aeration system is one which the air is pulled from the of a grain storage bin through mass of grain and discharged ough an air duct at the bottom of bin by means of an exhaust air The air is usually pulled down- d through the grain because the rance of the cooler air at the top ults in less moisture precipita- and also because this movement s counter to the natural upward of air through warm grain.

eration is useful in insect control two ways, Mr. Kline pointed out: It is easy to cool grain relatively kly to a level below 50° at which perature insect life becomes in- ve and eventually ceases alto- her; (2) The aeration equipment be used to apply fumigants. In igating, the fan is connected to the fumigant up through the bin one type of operation, allowing e for only a single passage of the igant through the grain, which mally would require around 10 utes for a killing concentration.

nother system uses recirculation. t requires the installation of an side duct for the pairing of two s so that the fumigant can be re- culated through the grain for a iod of 30 minutes to 1 hour. Then, r a 24-hour wait, the fumigant flushed out with fresh air.

Khapra Beetle

ubstantial progress has been de in controlling the khapra tle, D. R. Shepherd, agricultural earch service, USDA said. "By the of 1956," Mr. Shepherd add- "we will have completed the tment of practically all known stations. We believe that timely lication of regulations has pre- ed the spread of this pest to r parts of the country. It is nificant and gratifying that up to time the khapra beetle has not n found in any of the very large ages of the country.

Even though there is reason for imism, no one connected with the gram is overlooking the vagaries the problem. We know that light stations are difficult to find and re is a great opportunity for ead through the movement of t materials. Much survey work have to be done before we can sure that the pest has not spread other parts of the country. There st be continued vigilance at port entry to prevent new introduc- ns of foreign sources."

Mr. Shepherd said that more than 00 storage points have been in- cted one or more times for a total 60,000 inspections in 35 states. A l of 446 sites were found to be sted. These have been or will be igated in all cases. So far there e been only two cases where fum- ion was ineffective and only one e of reinfestation has occurred.

You probably are wondering what railroads are doing to check in- ation of boxcars," said Paul Mc- Spadden, entomologist, Archer-Daniels-Midland Co., Minneapolis, in opening his talk, "and so am I." Mr. McSpadden said that very little was being accomplished in meeting this problem. There have been 7,000 more cars treated for insect control out of about 725,000 boxcars now in use, he said. Mr. McSpadden showed slides of the large group of typically unclean cars.

W. W. Dykstra, fish and wild life section, U.S. Department of Interior, described some of the newer methods for control of rodents. He stressed particularly the value of establishing outside bait stations to intercept rodents before they get into the plant, and described the various types of bait in use. He said a re-examination would be made of the "tracking" type poisons, which have become quite popular in Europe, but pointed out that these would not be suitable for use in a food plant situation. From Mr. Dykstra's talk and comments from the floor, it was evident that birds are a major headache for the food plant sanitarian and elevator operator, and that no certain solutions were offered, and it was evident that opposition from humane societies was a great handicap to meeting the bird problem in many areas.

ILLINOIS AGRONOMY DAYS

URBANA, ILL.—"What's New in Crops and Soils" is the theme of nine agronomy days being held by the University of Illinois department of agronomy in cooperation with the county agricultural extension services. Four of the days have been held. Others are scheduled at Marion Jan. 15, Mount Vernon Jan. 16, Turkey Hill Grange Hall near Belleville Jan. 17, Paris Jan. 18 and Monmouth **Feb. 12.**

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

Extermo, in capital letters, for insecticide cones. Filed Sept. 23, 1955, by Avon-Strand, Inc., Chicago. First use June 1, 1955.

Weevldoom, in outlined capital letters, for liquid insecticide for application to grain in storage. Filed Oct. 14, 1955, by Mid-Western Spray Chemical Co., Inc., Mission, Kansas. First use Oct. 24, 1950.

Extermo, in capital letters, for insecticides. Filed Oct. 19, 1955, by Rochester Germicide Co., Inc., Rochester, N.Y. First use in January, 1895.

Design of leaf within circle, for chemical fertilizers for agricultural purposes. Filed Jan. 23, 1956, by "Selfa" Societa per il Commercio di Fertilizzanti Azotati, Milan, Italy.

"Pest" Toast you can make to greater insecticide sales... ESPESOL solvents

Obviously the *final* user won't appreciate your using Espesol Solvents in your insecticides, but your *customers* will! And they'll show their preference by reordering again and again.

Besides assuring you a better product, these superior solvents help eliminate many usual production headaches. They are unexcelled in quality, are known for never-varying uniformity. You get a consistent product every time. Use Espesol Solvents, the proven diluent with extremely high solvency powers—the coupon below brings full details.

SHORT NOTICE DELIVERY—Hurry-up calls for Espesol Solvents can be promptly filled. Our research department is also available to assist you in your formulation problem.

ESPECO

EASTERN STATES Chemical Corporation

P. O. Box 5008 • Houston 12, Texas • Phone WALnut 3-1651
Chicago Office: 1011 Lake St., Oak Park, Ill. Phone Village 8-5410
New York Office: 10 Rockefeller Plaza, N. Y.—Phone Circle 7-2520

Eastern States Chemical Corp.
Dept. C-1147, P. O. Box 5008
Houston 12, Texas

Please send me your catalog and specifications on solvents for insecticides.

Name_____ Title_____
Firm_____
Address_____
City_____ Zone____ State____

WORLD REPORT

By GEORGE E. SWARBRECK
Croplife Canadian and Overseas Editor

Gasoline rationing in Britain, now entering its fifth week, has hit all segments of the industrial and agricultural economy. Similar gasoline shortages are facing nearly all Western European countries as a result of the Anglo-French-Israeli attack on Egypt and the consequent closing of the Suez Canal.

Vitally affected is the fertilizer industry because the restrictions on transportation come at a time when the trade is urging farmers to lay in stocks before the spring rush.

While private motorists in the U.K. receive coupons for 220 miles of travel a month, industrial users are given allocations over and above this minimum for the use of salesmen and for deliveries.

These allocations, traders say, are much too small and therefore deliveries will have to be curtailed. Since road transport has to be used to make deliveries to farmers, the situation now developing could have repercussions later in the year.

Britain's Fertilizer Manufacturers Assn. has drawn attention to the problems of delivery. Last year, total usage of fertilizers on British farms hit an all time high; present indications are for an even greater demand this year.

FMA says: "The petrol and oil position will obviously intensify most gravely the difficulties of delivery to farms; its likely effects cannot possibly yet be estimated."

Cyprus

Despite the EOKA campaign of violence in Cyprus, directed against the British who use the island as a military base, the territory's overseas trade continues to grow.

Fertilizer imports are expanding and in the first 10 months of 1956 purchases were valued at the equivalent of $1,960,000. Nitrogenous fertilizers accounted for $868,000, phosphatic fertilizers for $812,000, and mixed fertilizers $268,800.

Austria took the biggest share of the business in nitrogenous fertilizers with sales valued at $417,200 closely followed by Italy at $411,600. Portugal and Israel shared the phosphatic fertilizer trade with $338,800 and $282,800 respectively.

Australian Plant

Australia's Electrolytic Zinc Co. has spent the equivalent of $9 million on a new plant for the manufacture of sulfate of ammonia. Operations have now started and productive capacity is assessed at 58,000 tons a year, enough to cover half of the country's current requirement.

Food Shortage Predicted

Speaking in Paris before the 29th Congress of the Societe de Chimie Industrielle, an American scientist predicted a critical world food shortage unless constant efforts are made to increase yields from farming acreage.

Dr. M. F. Fogler, executive vice president of the Nitrogen Division of Allied Chemical & Dye Corp., warned that world population is increasing at the rate of 100,000 a day, faster than the food supply, in spite of progress made in agriculture in recent years.

The world must supply not only food for these people but housing as well, Dr. Fogler said. This cuts down on the acreage available to grow food, he declared, and more and more food must be grown on less and less land.

Dr. Fogler said that industrial chemistry can do much to better the world food situation by supplying farmers with increasing quantities of fertilizers and insecticides. "For instance a ton of nitrogen will produce 20 tons of additional corn; 20 tons of corn will produce 8 tons of meat; and 8 tons of meat will supply 50 people with an adequate meat diet for a year.

"Based on present U.S. yields of about 40 bu. of corn an acre, a ton of nitrogen is equal to an additional 18 acres."

Dr. Fogler deplored the practice of removing plant foods through crop harvesting and then not fertilizing to replace these plant foods. "In this enlightened age, we, like our ancestors 10,000 years or more ago, are still mining the soil."

Dr. Fogler is a pioneer in the nitrogen industry in the U.S. Practically all of his business career has been in this field, first in the U.S. government financed Fixed Nitrogen Research Laboratory and since 1926 with Allied Chemical & Dye Corp.

UNION PACIFIC AGENT

PORTLAND, ORE.—Joe W. Jarvis, a native Oregonian and Oregon State College graduate, has been named supervisor of livestock and agriculture for Union Pacific Railroad with headquarters in Omaha. He received the first Union Pacific Railroad Carl Raymond Gray scholarship granted in Malheur County in 1936. Mr. Jarvis takes over the duties of Earle G. Reed, who retired last month.

208 Bu. Yield Wins "Reach for the Top" Nebraska Corn Contest

LINCOLN, NEB. — Max Loibl of Cozad, Neb., copped first place in the 1956 Nebraska "Reach for the Top" corn yield contest with a yield of 208 bu. an acre, M. D. Weldon, University of Nebraska extension agronomist, has reported.

Second place went to Donald Hanson of Kearney, Neb., with a yield of 182 bu. and third to Oren Patterson, Brady, Neb., with 180 bu.

A total of 524 farmers planted corn in 542 fields in 56 counties for the contest sponsored by the University of Nebraska Agricultural Extension Service.

The 506 irrigated fields in 51 counties averaged 122 bu. of corn per acre while 36 non-irrigated fields in 12 counties averaged 74 bu., Mr. Weldon reported. The state corn yield average for Nebraska in 1956 is 18 bu.

Among the irrigated fields checked 67 fields averaged over 150 bu. per acre; 272 yielded more than 125 bu. per acre; and 448 reported over 10 bu. per acre.

Ira Keiser of Saunders County led entries grown under non-irrigated conditions with a yield of 132 bu. per acre.

Thirty-six non-irrigated fields were measured this year and seven averaged over 100 bu. per acre. There were 19 fields above 75 bu. per acre and 26 above 50 bu. per acre.

Reports of fields in the non-irrigated group fell well below those irrigated, but even in the dryland group authorities felt records were mostly set with fields having a source of sub-irrigation.

Mr. Loibl's winning yield of 208 bu. under irrigated conditions was made on land that was in alfalfa for the past five years. Mr. Loibl added 160 lb. of nitrogen and 100 lb. of phosphorus to the soil and used the power hill drop method of planting with an average kernel spacing of 6½ to 7 inches.

Du Pont Announces Million Dollar Aid To Education Program

WILMINGTON—A fund of more than $1,000,000 for grants to 122 universities and colleges in its annual program of aid to education was announced Jan. 7 by the Du Pont Co. This support, which is for the new academic year, is an increase over the $900,000 in gifts made for the year.

Nearly all of the increase and more than half of the entire program are for the improvement of teaching in universities, colleges and high schools. The grants will support science and mathematics as well as other subjects.

Du Pont is awarding a total of $585,000 to nearly 100 colleges and privately supported universities to advance the teaching of science, mathematics and other fundamental liberal arts subjects.

The company is granting $290,000 to universities for fundamental research and $165,000 for post-graduate fellowships in science and engineering.

SMOG DAMAGE

OCEANSIDE, CAL.—A smog invasion last month caused damage to lettuce crops in the San Luis Rey Valley near here. Agricultural officials said that the smog shriveled outer leaves of about 10% of the romaine lettuce crop in the valley.

FLORIDA CONSUMPTION

TALLAHASSEE, FLA.—Florida fertilizer consumption during November totaled 238,375 tons, according to the Florida Department of Agriculture. This included 174,478 tons of mixed goods and 63,897 tons of materials.

HORSE & LION
NITROGEN FERTILIZERS
... for better yield and quality

"Horse & Lion" Urea 45: *Now 45% nitrogen,* pelleted and coated. Dust free.

"Horse & Lion" Urea 46: 46% nitrogen, pelleted, not coated. Instantly and completely soluble.

Both grades of urea now exceptionally low biuret: max. 0.35%

"Horse & Lion" Calcium Nitrate: 15½% nitrogen, nitrate form, immediately available; 28% lime, immediately available. Instantly and completely soluble. Uniform granulation.

"Horse & Lion" nitrogen fertilizers are produced by one of the oldest and largest fertilizer manufacturers in the world: Badische Anilin-& Soda-Fabrik AG., Ludwigshafen A. Rhein, Western Germany.

Stocks of "Horse & Lion" nitrogen fertilizers are carried at San Diego, Los Angeles, Port Hueneme, Oakland and Port of Stockton, California; Portland, Oregon; Seattle, Washington.

Sell "Horse & Lion" nitrogen fertilizers. For complete information and prices contact your nearest Horse & Lion fertilizer headquarters.

ATKINS, KROLL & CO.
Established 1906
Distributors, U. S. A.
417 MONTGOMERY STREET, SAN FRANCISCO 4, CALIFORNIA
417 SOUTH HILL STREET, LOS ANGELES 13, CALIFORNIA
421 S. W. SIXTH AVENUE, PORTLAND 4, OREGON

Special Retail Section

Better Selling

Richer Fields for Dealers

A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

daho Firm Increases Sales Volume by Adding Specialist n Farm Chemicals to Staff

By JESS F. BLAIR
Croplife Special Writer

The addition of farm chemicals by tephens-Bond Feed Co., Inc., at lackfoot, Idaho, not only brought uch new business but it helped und out the year's program by eli- inating slack seasons.

At one time the company dealt ostly in feed and grain, which are ill the major profit makers. Now, owever, fertilizers, insecticides and rigation supplies are becoming more an just a sideline. Every month this st growing season these items imbed steadily higher in total per- ntage of sales.

The store had handled farm chemi- ls for several years, but never did y good with them. There was a od reason for this, according to anager Melvin Olsen.

He had been pushing chicken and iry feeds and had spent little time ith fertilizers and insecticides. Then started making inquiries and found t why farmers were going else- here for these products. The store as selling the items but neither Mr. lsen nor his staff knew anything out the soil requirements of the ea nor what insecticide was most fective.

"Not many farmers knew what kind of fertilizer they needed," said Mr. Olsen. "And when insects strike these fellows want to buy from someone who knows what he is selling. I soon saw we needed a college trained man to take over this department and make a go of it."

Mr. Olsen soon found just such a an. He is Tom Wolfe, a man in his iddle 30's, who had studied to be a ctor, but finally switched to chem- try. Mr. Wolfe knew his stuff, to e Olsen's words, and he was a man ith the aggressive but pleasing per- sonality that the store needed to promote farm chemicals.

Now Mr. Olsen spends much of his time in the field. He knows when to expect the potato beetle and alfalfa weevil, and how to identify every insect in the area. He has held group demonstrations on farms, showing farmers how to identify the insects and just what to use and how to apply it. This not only helps the regular customers but enables him to meet others who become regular patrons of the store.

The entire farm chemical program has now been turned over to Mr. Wolfe. He buys what is needed, discusses long range needs with Mr. Olsen and the owners and is given a free hand with this department.

He also works closely with the county agricultural agent, the agricultural colleges and entomologists. In the short time he has been with the Stephens-Bond Co. he has built up a reputation that is widely known in the Upper Snake River Valley.

And how has this affected the sale of farm chemicals?

"It started jumping after the first month," said Mr. Olsen. "Mr. Wolfe is really making the farmers aware of fertilizers and our sales are rapidly increasing. In addition to this, we're selling a lot of irrigation supplies and other equipment."

This was brought about by the fact that heretofore the store had been working mostly with livestock and poultry farmers. The county of Bingham is claiming the honor of being the largest potato producing county in the country. The potato farmers, however, don't keep much livestock, so their business was taken elsewhere. As Mr. Wolfe started selling them fertilizer and insecticides, they started buying irrigation equipment, such as pipe, gloves, shovels and many other things from the store.

Now the store has an irrigation department with the items attractively displayed and prices quoted. Also with the irrigation the store does a good business in farm hardware.

One windfall which has come to the store came about because of Mr. Wolfe. Out west of the Snake Valley there is a new area where farmers are drilling irrigation wells and putting in thousands of acres of new land. This is quite a distance from Blackfoot, but not too far for Mr. Wolfe to travel.

The land is not too fertile, so the use of fertilizer in this area may soon create a big market, which the store hopes to get.

One way to sell fertilizer where it will really benefit the farmer, says Mr. Wolfe, is to first know just what the soil needs. To be accurate with his recommendations, he hopes to set up a set of records showing the cultural practice of each farm.

"Farmers haven't been using fertilizer very long," he said, "and often don't remember just what they used on a field nor how much. Another thing we need to know is what rotations have been used. Recommending fertilizer for a field

(Continued on page 17)

AHO DEALER — Melvin Olsen, anager of Stephens-Bond Feed Co., c., at Blackfoot, Idaho, is shown by e jeep-powered spraying rig that is ed to spray irrigation ditches to ep down weeds and grass. The ad- tion of a farm chemical expert to e store's staff has sent the sale of rtilizers, insecticides and weed kill- s off to a booming start.

SHOP TALK

OVER THE COUNTER

FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

Throughout much of the West there is a tendency for farm store owners to take advantage of the growing suburban and town trade. These dealers find that many of the urban newcomers are people who like to keep gardens, small orchards and beautify their properties with shrubbery and trees.

Although some dealers have lost farm customers in the exodus from rural to city communities, these customers can still be kept if the store will sell things they need. Many of the most progressive store owners are now adding nurseries, and plant and garden rooms as profitable sidelines.

At Glendale, Ariz., the Glendale Feed & Supply put in a small nursery two years ago and soon found it was a magnet to attract numerous suburban residents.

"Here in the Phoenix suburbs we have many people living on small tracts from a half-acre to three or four," says owner Art Schaub. "As the desert is gobbled up by these residents, they hurriedly put down a carpet of grass and some trees and shrubbery on the hot sands. And when they buy nursery stock, they also purchase fertilizer, insecticides and garden supplies."

Not only have nurseries paid off in the larger cities, but they are also good business in some of the smaller towns.

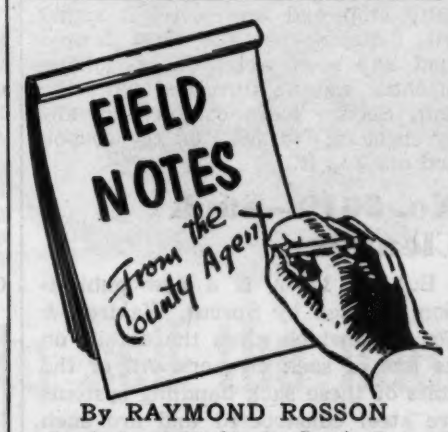
At Chandler, Ariz., the Chandler Feed & Seed Store increased its sales from $4,000 a month to over $20,000 in just over a year's time. However, very little trade came from the town residents. One of the owners, Dave Sands, says a nursery to serve people in both country and town was added.

"We can lure people into the store through the nursery," Mr. Sands says. "We've already learned the importance of impulse buying in a well-arranged store. With shrubs and plants suited to this area, we can also sell fertilizers, insect killers, pruning shears and other small hardware."

Such a nursery or plant room will also increase rural trade, some dealers say. At San Angelo, Texas, one of the largest feed dealers in town is Marion Balch who built a large new store about two years ago. He had some leftover space, and finally decided to put in a small display of garden and flower plants.

"We didn't expect much out of it,"

(Continued on page 17)



By RAYMOND ROSSON
County Agent, Washington County, Tenn.

A Happy New Year To You All . . . Janus, the God of beginnings, was supposed to look both ways, forward and backward. January 1957 finds most farmers and business men, as always looking forward; never backward . . . ready to start something; taking inventory or starting a new record book, or planning for a larger business along with better service in the business field.

On the farm, planning the best fields suited for corn, beans, tobacco, strawberries, potatoes and vegetables. Planning when to breed the dairy cows to freshen in the fall; the amount of plant food to purchase (the best buy of the year) for row crops, pasture and alfalfa.

January will find farmers buying brooders, baby chicks, tobacco canvas, fencing, manure spreaders, milking machines, garden tools, a few horse collars, plow points, hardware, lumber, furniture, trucks, tractors and automobiles.

Industry will continue to make dinner pails, and agriculture will continue to fill them.

While nature rests . . . suppose we all take stock, and plan to please our Maker, by serving our fellow man a little bit better in 1957 than we did in 1956.

Grasshopper Threat

WINNIPEG—More than 4 million acres of farm lands across southern Manitoba are expected to be infested with grasshoppers in 1957, according to information gathered by the Provincial Grasshopper Control Committee. Some 50 of Manitoba's 126 municipalities and government controlled districts will be faced with the necessity of taking action to control the insects.

Pacoast Chemical Co. Erecting New Building

SACRAMENTO — The Pacoast Chemical Co. is establishing new headquarters with the construction of a large warehouse and headquarters offices at 1704 Kathleen St., North Sacramento. Expenditure for the project will be between $50,000 and $60,000, the firm stated.

Construction of the building is expected to be completed in late January, and the firm plans to move into it about Feb. 1. The company has been serving northern California as a distributor of agricultural chemicals for six years. It maintains a number of regional warehouses and stocks.

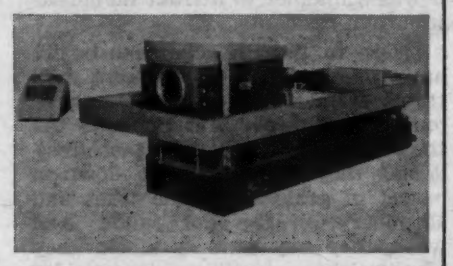
What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 5622—Weighing Belt Feeder

The Thayer Scale & Engineering Corp. has developed a new continuous weighing belt feeder for the basic material processing industries. Based on the patented Thayer leverage system, which has no knife-edge pivots, the unit is claimed to have outstanding accuracy and performance characteristics. Knife-edge pivots have been eliminated. The continuous weighing feeder has been designated as model 1200C and can be



furnished for handling materials such as rock salt, phosphate rock dust, ammonium nitrate and other fertilizers, grains, flours and any other material which may have flow characteristics varying from free-flowing to sticky. The unit can be furnished in various sizes for handling production rates from hundreds of pounds per hour to hundreds of tons per hour. A weight totalizer is furnished with the unit and a rate indicating dial is furnished in the face of the scale. This dial indicates the exact rate of feed through the unit at any given instant. Chart recorders for mounting on the scale or for remote mounting can be furnished to indicate the rate of material weighed and the accumulative weight handled at any period of the day. A load-out counter can be furnished so that the feeder can be set for any given tonnage and when that tonnage has been weighed through the feeder, the feeder will automatically stop and an electrical signal will indicate that the total desired load has been weighed. An adding machine can be furnished with the unit. Secure more complete details by checking No. 5622 on the coupon and mailing it.

No. 5619—Sack Cleaner

Bulletin 157-A is a new publication released by Sprout, Waldron & Co., Inc., which gives the details on its line of sack cleaners. All of the units of these sack handling systems are steel constructed and are such that installation can be made to suit any available space or individual preferences. The cleaning cage of each sack cleaner can be located in any corner of a building, warehouse or outside on a loading platform with the fan and collector placed overhead nearby or at some remote point. A safety cage or basket is provided on each of these units to prevent sacks from entering the system. The bulletin will be sent if you will check No. 5619 on the coupon and mail it to this publication.

No. 6524—Pyrethrum Booklet

African Pyrethrum Development, Inc., has prepared a booklet entitled "Pyrethrum Facts for 1957" and describes it as the "authorized and authoritative wrap-up of pyrethrum covering the current crop year. "The booklet includes such information as: Applications, development, formulations in which it is used as a base, production and sales figures and the production outlook. The booklet is available without charge. Check No. 6524 on the coupon and mail it to Croplife.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6523—Compost Grinder

Literature concerning the use of a compost grinding machine for garden or small farm use has been prepared by the W-W Grinder Corp. The machine, which is available for marketing through retail dealers, mills and screens both green and dry materials, breaking them into tiny quarter size pieces. Its screen also sorts out rocks and other undesirable material from the raw compost. Compost grinding screens come in various sizes. The most practical for home use is said to be a portable 2-X model, equipped with a 2½ h.p. retrievable starter engine. The larger 4-EV model is suitable for commercial use, and comes with a detachable elevator, so that either the grinder or the elevator can be used independently of the other. Models come equipped with either a gasoline engine or electric motor. Check No. 6523 on the coupon and mail it to Croplife to secure complete details.

No. 6522—Wall Chart

Up-to-date instructions for the safe unloading and handling of sulphuric acid are presented on a new 17 by 22-in. wall chart available through the industrial chemicals division of the Olin Mathieson Chemical Corp. The chart is printed in red and black on special moisture-resistant paper in easy-to-read form, according to company officials. It describes step by step the proper methods for pump unloading and air unloading of tank cars, with special attention to cold weather procedure. Diagrams of piping arrangements are shown for both methods, as well as a list of safety "do's" and "don't's." The chart also includes instructions for preparation of tank cars for the return trip to the manufacturer. To secure the wall chart check No. 6522 on the coupon and mail it to Croplife.

No. 5602—Conversion Kit

Instant change-over of dust seed treaters to handle ready-mixed liquid seed treating chemicals is now possible through use of a new conversion kit manufactured and sold by Panogen, Inc. Chief advantages claimed for the kit are that it requires only a few minutes to install, converts all standard dust treaters so they can be used for applying liquid Panogen, permits accurate regulation of dosage and eliminates dust. The kit includes all the components needed to convert a dust treater to Panogen operation. Each kit is accompanied by a simple chart for computing the correct rate of flow so that proper dosages are easily maintained. The chemical will not freeze or burn. Secure more complete details by checking No. 5602 on the coupon and mailing it.

No. 6515—Dispersant

Orzan P, a new member of a group of surface-active, lignin sulfonate chemicals for industry, is now being marketed by the Crown Zellerbach Corp. The product has the property of precipitating readily from solutions and clinging to fibers or other materials present, company officials say. A spray-dried powder, the product may be precipitated from even dilute solutions by the addition of alum. Recommended uses are: as a binder for fibers, retention of fines, an emulsifier, an emulsion stabilizer, a flocculant and a dispersant. Applications in the insecticide field have been made successfully, according to company officials. They add: "It is possible that the farmer, as well as the chemist, will find Orzan useful. A large amount of work has been done by agricultural researchers at Oregon State College, Washington State College and the University of California, as well as private industries, to investigate Orzan's effect on soils and plants. A number of potential applications have resulted. It is known that the product may be used to improve soil structure, improve water penetration, add organic matter to the soil, supply additional nutrients, improve growth of certain crops and minimize wind erosion." Secure more complete information by checking No. 6515 on the coupon and mailing to Croplife.

No. 6516—Garden Duster

A permanent, re-usable plastic garden duster is being marketed by the Kalo Co. Company officials say that the duster has no inner tube to clog and can be used conveniently with one hand. They continue: "Garden Duster is filled with Plantgard 1% Rotenone-copper garden and rose dust to fight many chewing and sucking insects and fungus diseases in the garden." A caption on the duster reads: "Leaves no dangerous residue when used as directed." To secure more complete information and details of price in quantity lots, check No. 6516 on the coupon and mail it.

No. 6517—Deer Repellent

A deer repellent is now being manufactured by State College Laboratories, a subsidiary of the J. C. Ehrlich Co., under the trade name of College Brand Magic Circle. The new product is claimed to be a foolproof, easy-to-use chemical that is mixed in proportions of one part to 100 parts of water and applied as a spray. It can be used by itself or mixed with almost any ordinary insecticide and fungicide. According to the company,

Send me information on the items marked:

- ☐ No. 5602—Conversion Kit
- ☐ No. 5619—Sack Cleaner
- ☐ No. 5622—Belt Feeder
- ☐ No. 6515—Dispersant
- ☐ No. 6516—Garden Duster
- ☐ No. 6517—Deer Repellant
- ☐ No. 6518—Adsorbents
- ☐ No. 6519—Spreader
- ☐ No. 6520—Granulator
- ☐ No. 6521—Liquid Machine
- ☐ No. 6522—Wall Chart
- ☐ No. 6523—Compost Grinder
- ☐ No. 6524—Pyrethrum Booklet

NAME .....

COMPANY .....

ADDRESS .....

SLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS
PERMIT No. 2
(Sec. 34.9, P. L. & R.)
MINNEAPOLIS, MINN.

BUSINESS REPLY ENVELOPE
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

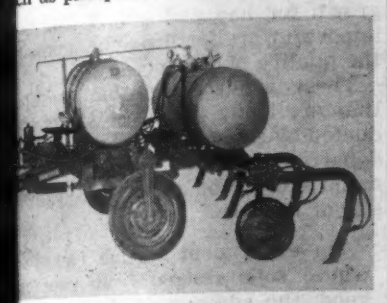
P. O. Box 67

Reader Service Dept. Minneapolis 1, Minn.

operty owners can spray a ring ound their shrubs, grain fields, rdens or orchards, and deer—and in st cases — beavers, woodchucks, coons and skunks will keep away. e spray is claimed to last for 30 s. One- and 5-gallon containers being marketed. Check No. 6517 the coupon and mail it to secure re complete details.

o. 6521—Liquid ertilizing Machine

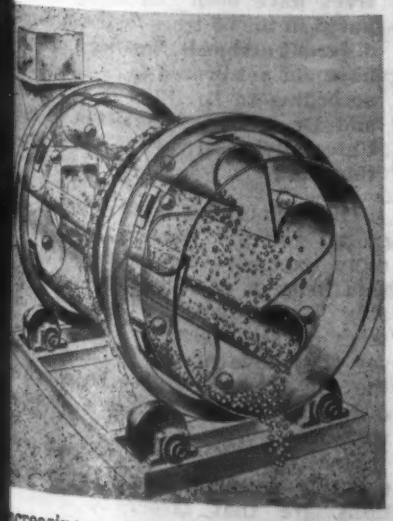
A new liquid fertilizing machine, ich permits the simultaneous sub- face application of anhydrous am- nia and other liquid fertilizers h as phosphates or complete solu-



ns has been developed by the mpster Mill Mfg. Co. The applica- , named the Dual LiquiJector, con- ts of the Dempster No. 500 3-point ch hydraulic lift carrier whereby solution tank with metering pump mounted on the No. 500 carrier d the 150-gal. anhydrous ammonia nk with a flow valve control is ounted to the square bar. This per- its the distribution of both solution d anhydrous ammonia to be de- sited under the soil in one opera- n. Different types of the company's uid solution pumps and tanks can furnished for handling either cor- sive or non-corrosive material. rincipal advantages claimed for the plicator are the time and labor vings resulting from the simultane- s application and the even distrib- ion at one time of the two types of uid fertilizers. By using this ma- ine additional NH_3 can be injected to the soil to supplement the nitro- n content with any of the other uid fertilizers and nitrogen-free lutions can be used to advantage the second unit, company officials aim. Secure details by checking No. 21 on the coupon and mailing it.

o. 6520—Granulator

A new type of granulator, the ackett Star Granulator, has been troduced to the fertilizer industry, cording to officials of the A. J. ackett & Sons Co. Featuring what called a new concept in granula- on equipment design, the granu- tor is equipped with five curved ffles on the interior of the ma- ine. Action by these baffles violent- rolls and tumbles the material rough the machine, substantially



creasing product recovery, efficiency nd reducing the costs of production, cording to Sackett. Several of the anulators already are in action in e industry and were the subject of a discussion by Albert Spillman, Fertilizer Manufacturing Cooperative, Inc., at the recent meeting of the Fertilizer Industry Round Table in Washington, D.C. The Sackett company indicates U.S. and foreign patents are pending. The accompanying photograph illustrates the design and action of the granulator. For further information please check No. 6520 on the coupon, clip and mail it to Croplife.

No. 6518—Adsorbents

The Floridin Co. has produced a booklet describing its products for agricultural chemical processing. The products are trade-named Diluex, Diluex "A," Florex and Florigel. The products' action in agricultural and household pesticide formulations is outlined. The use of several products as adsorbent carriers in the formulation of granular pesticides is described as is the formulation processes in frequent use. Check No. 6518 on the coupon and mail it to secure the booklet.

No. 6519—Combination Spreader

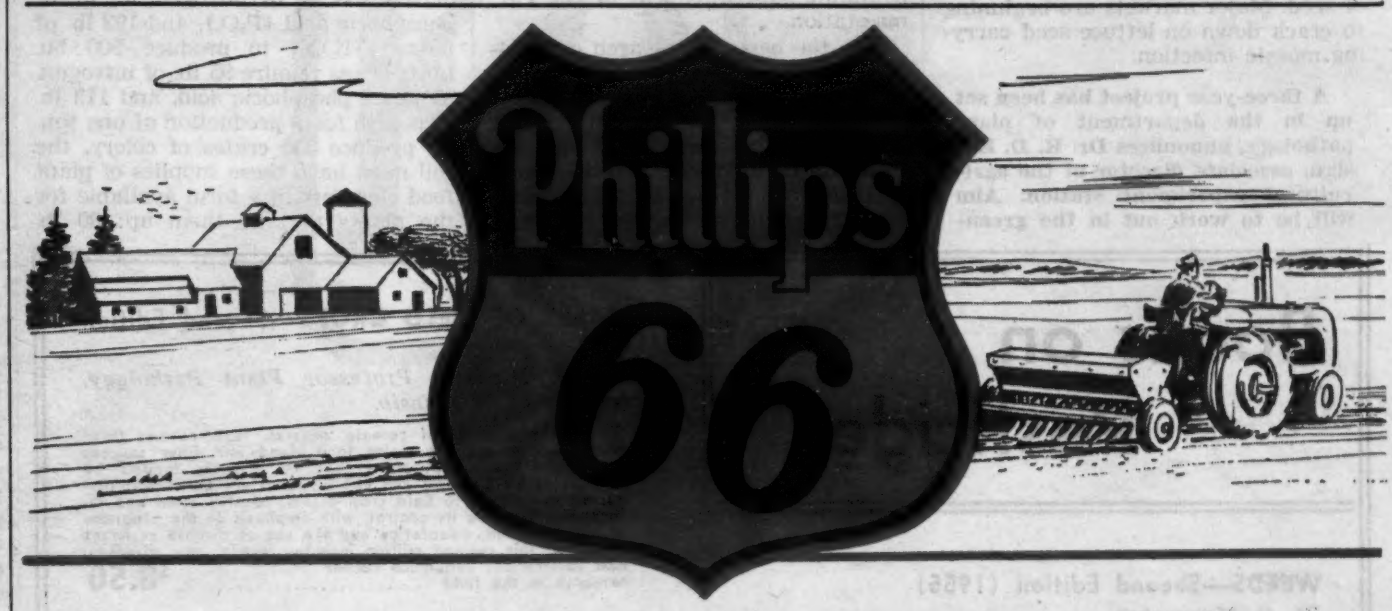
The Highway Equipment Co., Inc., announces its "New Leader" engine driven combination spreader. The announcement states: "It affords a new convenience to the driver by the very accessible engine location, also a larger engine with more horsepower for spreading maximum tonnage of lime and other agricultural products. A new direct drive from the engine direct to the distributor discs eliminates the use of chains, sprockets, idlers and some bearings." For further information check No. 6519 on the coupon and mail it to Croplife.

Oregon Conference

CORVALLIS, ORE.—A conference for fertilizer dealers has been scheduled at Withcombe Hall, Oregon State College, Jan. 17. It is being sponsored by the college and the Pacific Northwest Plant Food Assn.

UTAH WEED MEETING

SALT LAKE CITY—A three day Utah weed control meeting is being planned in early March. A committee to set up the session was named at the recent meeting of the Utah State Weed Committee.



Why it pays to sell the name that's known and trusted in important Farm Markets:

Profit and the pride in selling products that help your customers are the big reasons you are in business. Combine all of Phillips *66* multitude of satisfied farm users and *you* get a big advantage in selling Phillips *66* Ammonium Nitrate to *your* customers. Further, you have the assurance that the production of Phillips *66* Ammonium Nitrate is backed by the same progressive research that has made Phillips such a fast growing organization.

So, sell with confidence for present and future profit . . . sell with a leader—Phillips *66* Ammonium Nitrate.

. . . and Phillips 66 Ammonium Nitrate offers you these big profit advantages:

1 *Consistent, convincing advertising* of Phillips *66* Ammonium Nitrate. This includes outstanding state and regional farm papers . . . and radio—all pre-selling Phillips *66* Ammonium Nitrate for you.

2 *An outstanding product,* backed by all of the vast resources of Phillips laboratories, manufacturing facilities, plus actual use on thousands of farms. Phillips *66* Ammonium Nitrate is prilled to flow freely, handle easily.

3 *Personal service* from your Phillips *66* Fertilizer field man and prompt deliveries are included in the many profitable extras you get from Phillips *66*.

Call your nearest Phillips office, listed below, for help in planning a bigger and more profitable 1957.

A companion high nitrogen fertilizer for your quality mixed goods.

PHILLIPS CHEMICAL COMPANY
A Subsidiary of Phillips Petroleum Company, Bartlesville, Oklahoma

Offices In:

AMARILLO, TEX.—*First Nat'l Bank Bldg.*
ATLANTA, GA.—*1428 West Peachtree Street*
BARTLESVILLE, OKLA.—*Adams Bldg.*
CHICAGO, ILL.—*7 South Dearborn St.*
DENVER, COLO.—*1375 Kearney Ave.*
DES MOINES, IOWA—*6th Floor, Hubbell Bldg.*
HOUSTON, TEX.—*1020 E. Holcombe Blvd.*
INDIANAPOLIS, IND.—*1112 N. Pennsylvania St.*
KANSAS CITY, MO.—*500 West 39th St.*
MINNEAPOLIS, MINN.—*212 Sixth St. South*
NEW YORK, N. Y.—*80 Broadway*
OMAHA, NEB.—*6th Floor, WOW Building*
PASADENA, CALIF.—*330 Security Bldg.*
RALEIGH, N. C.—*804 St. Mary's St.*
SALT LAKE CITY, UTAH—*68 South Main*
SPOKANE, WASH.—*521 E. Sprague*
ST. LOUIS, MO.—*4251 Lindell Blvd.*
TAMPA, FLA.—*3737 Neptune St.*
TULSA, OKLA.—*1708 Utica Square*
WICHITA, KAN.—*501 KPH Building*

FARM SERVICE DATA
Extension Station Reports

Mosaic isn't even a serious problem in Idaho's lettuce seed-producing areas, yet a University of Idaho agricultural project on the production of mosaic-free lettuce seed has been announced.

The explanation lies in the fact that the university's agricultural research men are looking ahead, seeking ways to strengthen Idaho's position of leadership as a major producer of seed. Major markets are beginning to crack down on lettuce seed carrying mosaic infection.

A three-year project has been set up in the department of plant pathology, announces Dr. R. D. Ensign, associate director of the agricultural experiment station. Aim will be to work out in the greenhouse and in the field a production program that can be recommended to Idaho lettuce seed growers as the basis of producing mosaic-free seed.

Project leader will be William R. Simpson, assistant plant pathologist at the Parma branch station. Cooperating with him will be Dr. A. M. Finley, head of the department of plant pathology at the university, and D. F. Franklin, superintendent of the Parma station.

"On the basis of research conducted elsewhere in the U.S. on the nature of the lettuce mosaic virus it seems probable that a satisfactory program for the production and certification of disease-free lettuce seed in Idaho can be accomplished," said Dr. Ensign in announcing the new project. "Idaho already is one of this country's largest producers of this seed and the experiment station hopes to be able to aid in maintaining that leadership."

★

California farmers were told recently by the California Fertilizer Assn. that soils in many areas of the state are becoming deficient in their native supply of potash. This development is being brought about primarily by reason of consistently heavy-cropping. Another factor, which is showing up with increasing frequence in specific crops, is the difference in plant food appetite of the various crops.

To show the difference in vegetable crop uptake of plant food elements, the association pointed out that Irish potatoes must take up from each acre of soil 108 lb. of nitrogen, 42 lb. of phosphoric acid (P_2O_5), and 192 lb. of potash (K_2O), to produce 500 bu. Lima beans require 95 lb. of nitrogen, 24 lb. of phosphoric acid, and 113 lb. of potash for a production of one ton. To produce 350 crates of celery, the soil must have these supplies of plant food elements in a form available for the plants to take them up: 80 lb. nitrogen, 65 lb. phosphoric acid, and 235 lb. of potash.

In Madera County, California, application of potash to Ripperdan soil has increased the yield of potatoes by about 66 100-lb. sacks per acre. These experiments, under the direction of Clarence Johnson, county farm advisor, have included rates of potash applied ranging from 150 to 400 lb. actual K_2O per acre. They indicate that the soils which test lowest in available potash will generally increase crop yields when an adequate supply of potash is applied.

★

Just how much will fertilizer increase the yield of oats and barley grown for hay and grain? And how important are fertilizers in improving the quality of these crops?

These are some of the questions that are being pursued by tests conducted by the soils and plant nutrition department of the Max C. Fleischmann college of agriculture, University of Nevada.

On experiment station farms, where soils ranged from poor to good, the addition of 100 lb. of nitrogen per acre increased the yield of barley by 126% in one test and 154% in another, according to Dr. L. E. Dunn, head of the department.

Oat hay yield was increased by 24% by the addition of 50 lb. of nitrogen and the protein content was increased from 4.63% to 5.15%. However, the phosphorus content was lowered from 0.15 to 0.12 percent. With phosphate fertilizer added, the phosphorus content of the oat hay was increased from 0.15 to 0.23% with some additional increase in yield over use of nitrogen alone.

Barley showed similar results in both protein and phosphorus content. Somewhat similar responses on yields and quality of grain can be expected. Dr. Dunn points out that a phosphorus content of below 0.15% in grass hays and 0.22% in legumes is regarded as too low for good quality.

★

University of California scientists have developed an effective soil treatment for overcoming zinc deficiency in avocado trees.

By mixing zinc with a chemical agent that makes the zinc easier for the tree to absorb, the scientists find they can spread the dry material by hand or simply add the solution to irrigation water.

Many avocado orchards in California suffer, in some degree, from recurring zinc deficiency. Current practice involves feeding zinc to the trees through the leaves by means of sprays.

By applying a zinc chelate at half a pound or more per tree, zinc deficiency symptoms of avocado trees have been completely eliminated in the 55 trees tested in three different orchards. Smaller amounts have not yet proved to be adequate, according to Dr. Ellis F. Wallihan and Dr. Tom W. Embleton of the University's Citrus Experiment Station staff.

The amount of zinc chelate required for soil treatment makes it more expensive than spray application to trees on level land but probably less expensive than spraying trees on steep slopes. The scientists say they have reason to believe that the soil treatment may be effective over a longer period of time than the spray.

Zinc chelates have been used successfully on citrus trees, but indications are that larger applications would be needed to remedy zinc deficiency. Work with these materials is continuing on experimental plots in San Diego, Ventura and Santa Barbara counties.

Books on Pesticides

WEEDS—Second Edition (1955)
W. C. Muenscher

Entire book has been revised and reset, with descriptions of seventy weeds added to the original list of five hundred, plus twelve new full-page plates depicting nineteen kinds. Keys and full descriptions provided for identification with detailed illustrations of 331. Types and sources of weeds, their means of reproduction and dissemination, and the amount of damage they inflict on crops. Specific directions for control, with reference to chemical methods of recent discovery $10.00

CHEMICAL BUSINESS HANDBOOK
Dr. John H. Perry

1,300 double column pages, the equivalent of several average books; 700 illustrations, by 124 contributors. Market research data section is 280 pages, business mathematics 200 pages, financial and accounting 142 pages, research and development 150 pages, sales and advertising 92 pages, twenty sections in all. The book deals with chemical management problems and is useful to technical men, engineers and executives, in the chemical and allied fields. Dr. Perry is editor of the Chemical Engineers Handbook, a companion publication $17.00

INSECT PESTS OF FARM, GARDEN and ORCHARD Fifth Edition (1956)
Leonard M. Peairs and Ralph H. Davidson

A standard text for 44 years. Includes insects affecting grasses, grains, cotton, legumes, vegetables, flowers, fruits, stored products, household goods and domestic animals. Contains a new chapter on insecticide formulations, spray mixtures, application equipment, etc. Material on forty new pest species added, including drastic changes in the illustration. 661 pages $8.50

DDT and NEWER PERSISTENT INSECTICIDES
T. F. West and G. A. Campbell

The first and major part of book is devoted to the physical and chemical properties, manufacture, formulation and applications of DDT. The second part deals with other chlorinated hydrocarbons whose insecticidal properties have been discovered recently and compares these new insecticides with DDT. The preparation of aqueous suspensions, solutions, emulsions, and dusts containing DDT, the compatability of DDT with other insecticides, fungicides and additions are covered in detail. Contains dozens of tables on the solubility of DDT in various solvents, the catalytic activity of accessory substances in the presence of DDT, analogues of DDT, the comparative toxicity, hydrolysis and solubility of DDT analogues, the toxicity of DDT for almost all important insects, etc. Many illustrations $8.50

APPLIED ENTOMOLOGY—Fifth Edition
H. T. Fernald and Harold H. Shepard

This text since 1921 has had an outstanding record of usefulness. The Fifth Edition preserves the general organization and coverage, with changes to improve the presentation and to incorporate new knowledge. Contains chapters on anatomy, physiology and development. The economic importance and control of insects are discussed in a general way with much attention to insecticides. The classification of insects is emphasized, with examples drawn from species conspicuous for being very harmful or decidedly beneficial. Specific control measure included for injurious forms. Last chapter considers other pest animals closely related to insects. 385 pages $7.00

DISEASES OF FIELD CROPS—Second Edition (1956)
James G. Dickson, Professor Plant Pathology, University of Wisconsin

Covers the diseases of cereals, grasses, legumes and fiber plants, which are the major food, feed and fiber sources throughout the world. More than 60 diseases incited by viruses, 40 by bacteria and 300 by fungi are listed and discussed in relation to field crop plants. Identification and information basic to its control, with emphasis on the problems of crop rotation, adaptation and the use of disease resistant varieties. This revised edition includes several new diseases, new illustrations and much recent research in the field $8.50

THE GARDENER'S BUG BOOK (1956)
Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information, scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound $7.50

THE CHEMISTRY AND ACTION OF INSECTICIDES
Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides. Illustrative data in form of tables, and a convenient appendix of equivalents arranged for practical use in the field. 504 pages..... $8.00

WEED CONTROL
W. W. Robbins, A. S. Crafts, and R. N. Raynor

A textbook-manual presenting a modern view of the rapidly developing field of chemical weed control. Reports in detail the research on which most modern herbicide usage is based. Weeds, their reproduction, prevention, biological control, chemicals in weed control. Herbicides, foliage contact applications, hormone-like substances, root applications, evaluations of combinations of chemical applications. Weeds of grasslands and turf. Special weed problems, cropped and uncropped areas. Published 1952. 503 pages, 155 illustrations $8.00

INSECT, FUNGUS AND WEED CONTROL
Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful..... $10.00

Order From Croplife

Reader Service Department
P.O. Box 67
Minneapolis 1, Minn.

(enclose remittance)

LOW-COST KEY TO SOIL PRODUCTIVITY

The American Potash & Chemical Corporation, Duval Sulphur & Potash Company, Potash Company of America, Southwest Potash Corporation, and United States Potash Company Division of United States Borax & Chemical Corporation, comprise the membership of the American Potash Institute, Inc. Through their Institute, these firms conduct a continuing program of research and education, directed toward the more efficient use of fertilizers.

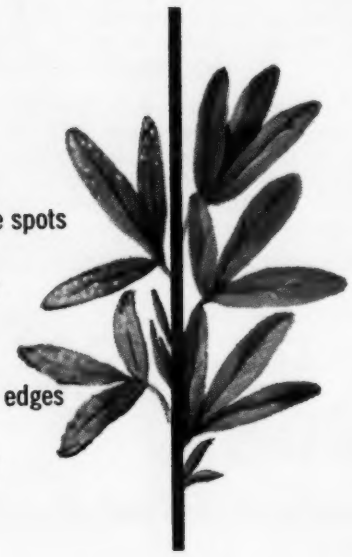
As a contribution to that program, the regionalized advertising message on the following two pages will appear as a part of the Institute's 1957 informational campaign in Farm Journal, Successful Farming, Farm and Ranch, Progressive Farmer and Capper's Farmer. Enlargements, for wall hanging, will also go to each vocational agriculture department, each county agent, and each university soils and agronomy office in the United States. Other educational messages will appear in some 50 farm magazines early in the fall of 1957.

Wall-poster-size enlargements of these messages, regionalized for the South, the Midwest, the West, and the Northeast, are available for tacking up. For how to obtain them, and how to use these and other American Potash Institute materials, see page four, of this insert.

small almond

leaf edges

fired



white spots

early

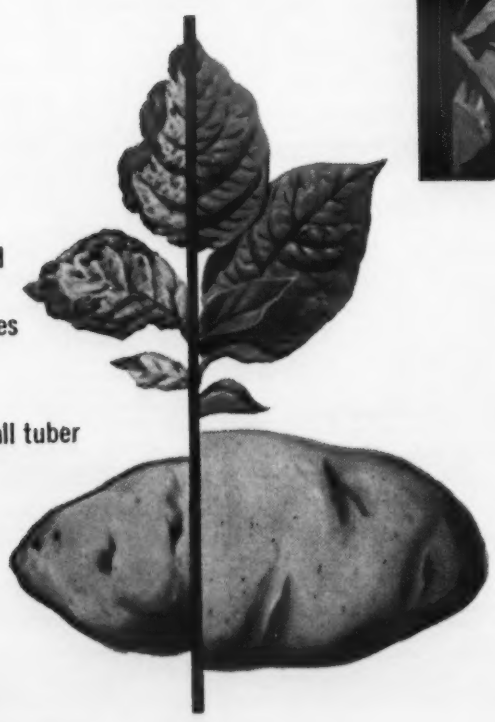
fired edges

later

poor

pear size,

color



fired

edges

small tuber

uneven

prune ripening

vegetables lack quality

WH[illegible]-WHEN-HOW you should use

POTASH

Low-cost key to productivity in Western soils

WHY use potash? Very simple: *it pays.*

Potash deficiencies have now come to many Western soils. In the West, potash deficiencies may occur over large areas, or may turn up as small "islands." In either case, they may be sneaking up on *you.*

Without *any* potash, you will get no crop at all. With *severely limited* supplies of potash, crops will live, but will develop the starvation symptoms shown on the left-hand sides of the illustrations on the opposite page. With *moderately limited* amounts of potash in your soil, you won't see these warning hunger signs—will never know the profit you *might have* realized.

For when you have enough potash to prevent hunger signs—but still not the amounts you need—peaches, prunes, pears are smaller in size and of poorer quality. Nut crops, such as the almond, are much reduced in yield. Shipping quality of fruits and vegetables is not good. Lettuce heads will be smaller, looser. Tomatoes will be off-color, ripen unevenly. In all crops, there will be more culls. Crops will make less efficient use of water.

In short, potash—the *lowest cost* of the major fertilizer elements—has a big effect on the *highest profit* parts of your crop: yield, grade, *quality.*

WHEN is the best time to use potash? There are many good times. At seeding, sidedressing, topdressing. But remember this: Western crops—alfalfa, prunes, potatoes, clover, peaches, tomatoes, celery—all use large amounts of potash.

Whenever you market a crop, you have sold potash off your farm or ranch. And, on many soils, you need to replace it just as surely as you need to fill the fuel tank after a day of heavy plowing.

If you are following typical Western cropping patterns or have orchards or vineyards, *you inevitably are running lower and lower on potash.* Without delay, have soil tests or leaf analyses made. Potash is low in cost; it will pay you to put on *every pound* the tests show you need.

HOW to apply potash? On row crops, potash is usually applied as mixed fertilizer in the row at planting time. This fertilizer is banded two inches below and several inches to the side of the seed, in most cases. 10-10-10 is the most widely used. Potash is also sometimes applied as liquid mixed fertilizer in the last irrigation before planting, and during the growing season in the irrigation water.

Much potash is also sidedressed. On lighter soils—and with certain crops, such as lettuce, celery, beans, corn and berry crops—you can sidedress straight potash or a mixture of potash and nitrogen, during the growing season.

In orchards—"how-to" depends on the soil. If sandy, you broadcast potash. If the soil is heavy, you need to place potash below cultivation depth. On hay and pasture, broadcasting potash is effective.

WRITE FOR FREE BOOKLET:
"Potash In Agriculture"

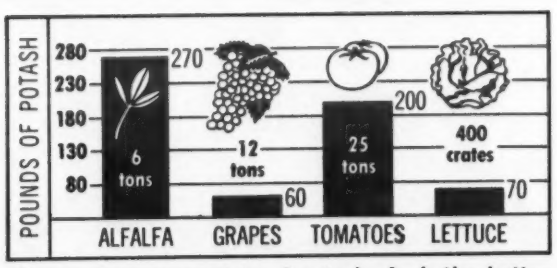
K_2O AMERICAN POTASH INSTITUTE, INC.

Dept. 154, 1102 Sixteenth Street, N.W., Washington 6, D.C.

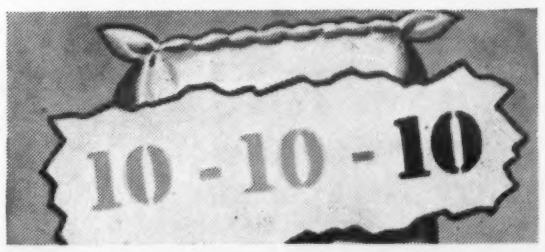
MEMBER COMPANIES: American Potash & Chemical Corporation • Duval Sulphur & Potash Company • Potash Company of America • Southwest Potash Corporation • United States Potash Company Division of United States Borax & Chemical Corporation

2-Minute Short-Course On How to *Buy* Potash . . .

Don't wait for signs. Test leaves, soil. Apply needed potash. Consult your official agricultural advisor.

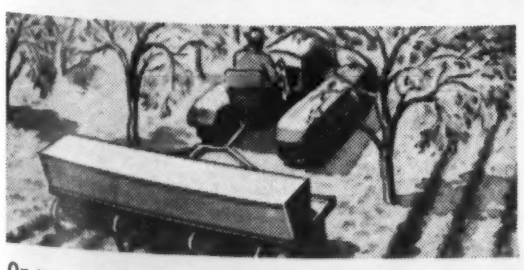


Western crops use lots of potash. And, the better your yield, the more potash next year's crop needs.

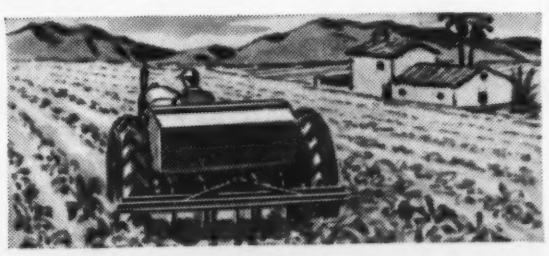


Potash is the "anchor man" in fertilizer analysis—just as it is in building quality and yield in crops.

And How to *Apply* Potash . . .



On average and heavy orchard soils potash is placed 7" to 9" deep. On sandy soils, you may broadcast it.



Straight potash can be sidedressed in row crops. Can be banded at seeding time in mixed fertilizer.

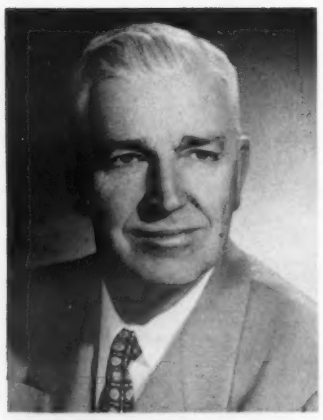
Close-planted forages—for pasture, hay and dehydration—can be topdressed with potash in spring.

PROGRAMS and ACTIVITIES
of
THE AMERICAN POTASH INSTITUTE, INC.

The American Potash Institute is a research and educational organization. Its purpose is to expand the agricultural use of potash on a basis that is sound and profitable to the farmer.

Organized in 1935, the Institute engages in a wide range of activities, and offers many services to farmers and agricultural leaders. These activities and services include: fellowships and research grants in agricultural colleges and experiment stations; fertilizer demonstrations, in cooperation with agricultural extension forces, soil conservation service, county agents, vocational agriculture teachers, and other groups; education in efficient use of potash, through publications, motion pictures, radio, television, books, and advertising. The Institute's monthly magazine, "Better Crops With Plant Food," goes regularly to 24,000 teachers, county agents and other agricultural leaders. Regional newsletters, reprints, and direct service to the farm press also constantly help explain the importance of potash in balanced soil fertility.

Partial Listing of Educational Materials Available from the American Potash Institute



M. E. McCollam
Western Manager
314 First National Bank Bldg.
San Jose 13, California

- **Motion Pictures** (16 mm., color)
  - —Potash Production in America (25 minutes)
  - —The Plant Speaks (series of 4 films)
    - . . . Thru Deficiency Symptoms (25 minutes)
    - . . . Soil Tests Tell Us Why (10 minutes)
    - . . . Thru Tissue Tests (14 minutes)
    - . . . Thru Leaf Analysis (18 minutes)
- **Better Crops With Plant Food**
  - —Monthly magazine on soil and crop management.
- **Slide Sets and Film Strips**
  - —Successful Alfalfa—You Can Grow It
  - —Soil Fertility and Soybeans
  - —Potash Deficiency Symptoms
  - —Potash Production in America
- **Wall Posters**
  - —Plant Food Utilization
  - —Potash-Starved Legumes
  - —Corn Starvation Symptoms
  - —Cotton Rust Is Potash Hunger
- **Pamphlets**
  - —Potash Deficiency Symptoms
  - —Potash In Agriculture
- **Reprints of Articles on Soil Fertility**
- **Regional Newsletters**

You are invited to make use of any or all of these materials. In addition, your regional agronomist will be pleased to be of personal assistance. Call on him.

THE AMERICAN POTASH INSTITUTE, INC.

Dept. 154, 1102 Sixteenth Street, N.W., Washington 6, D. C.

K_2O

MEMBER COMPANIES: American Potash & Chemical Corporation • Duval Sulphur & Potash Company • Potash Company of America • Southwest Potash Corporation United States Potash Company Division of United States Borax & Chemical Corporation

College-Trained Men Make Business Hum

The kind of employees an owner keeps can make or break a business, says John Campbell, owner of Campbell's Farm and Ranch Supply, Lovington, N.M. Mr. Campbell does a gross business of $750,000 in feeds, farm chemicals and equipment, and keeps an average of about 17 employees. Three or four of these are used in a branch store at Tatum, N.M., which he opened about three years ago.

Of these 17 workers, six are college graduates, and each one has been trained in some special phase of agriculture.

One works with insecticides, one with feeds, while there is a fertilizer expert and a livestock man. Each man is given a more or less free hand in building up his department and is held responsible for that part of the business.

"Any business of this size is too big for one man to handle," said Mr. Campbell. "So why not hire intelligent, well-trained men to help handle it? I especially find these young college men a good investment. They're up on the latest methods, they have nice personalities and fit well into the social and civic life of the town, and they have new ideas that are sometimes invaluable."

He finds that these men will do a lot better job than untrained men who have knocked about at a dozen or so low-paying jobs.

One of his top men is an ex-county agent, who has planned several profitable projects that greatly increased the store's business.

"With men like these around me, I don't go off on tangents," said Mr. Campbell. "Before launching on any new enterprise, I call them into conference, If one of us is ignorant about some phase of the new idea, there is always some one who has expert knowledge about it and can set us straight."

He has kept one employee for 10 years, another for eight, while several have been with the firm for five or six years. The store has been in existence only about 10 years, or since Mr. Campbell came back from World War II.

"We don't hire these men for loading feed sacks or mixing fertilizer," he said, "though they are all willing to do it. I hire them for their brains, their know-how and their personalities. I pay them well and expect them to repay me in getting business for the store. Thus far it has worked out mutually profitable for us all."

COUNTY AGENT OFFICERS

STATE COLLEGE, N.M.—New officers of the New Mexico County Agents Assn. are Odelio Baca, San Miguel County, president; Vance Rusk, Colfax County, first vice president; Don Chappell, Dona Ana County, second vice president, and Anselmo Sedillo, Mora County, secretary-treasurer.

OVER THE COUNTER

(Continued from page 9)

Mr. Balch says, "but it really surprised us. I put a woman in charge who loved flowers, and before long we had dozens of women out here every day. Often while a woman looks over the plants, her husband will come over and get acquainted with us. Quite often they both became our friends and steady customers."

Mr. Balch finds that country people are also good customers for the plants. He says one way to attract customers is to stock a few of the rare, exotic plants and then advertise them. When these plants are displayed, he sometimes has a rush like that of a big bargain sale downtown.

The advantage of such a sideline is not confined to any one section of the country. Jim Wakefield, who manages a large farm and home store at Idaho Falls, Idaho, finds his garden room one of the most profitable departments.

Prices Are Clearly Shown

Mr. Wakefield has the merchandise attractively arranged, with labels and prices shown clearly. He has taught his employees the fundamentals of good salesmanship, which include courtesy, neatness and a desire to help the customer. They have been briefed on what each item is and all the things a customer needs to know about it.

Advertising is almost a must with this kind of merchandise, Mr. Wakefield says. He often runs a special on a few items, and then reaps a nice profit from the impulse buying that follows.

Mr. Wakefield sells a large quantity of fertilizer and insecticides to the farmers of the area and finds that the different kinds of merchandise fit in well together.

All these dealers say that such a store must be kept clean, arranged in an eye-catching manner and the stocks must be kept fresh and priced within reason. They invite people to visit the store without being subjected to high-pressured salesmanship. Making friendly explanations about the various items for sale leaves a good impression with customers and insures them of getting something they really want.

"There is not much difference in the buying habits of town and country anymore," one store owner states. "Maybe a 10-lb. sack of fertilizer sold to a town gardener doesn't compare to three tons bought by a farmer. But that small sale may be the forerunner of many dollars worth of merchandise purchased before the end of the year. Also most of these items are the long-profit kind, so a few dozen extra customers really add to the store's profit."

Cover Crop Fertilization

DAVIS, CAL.—If a cover crop is planted in a prune orchard during the off-season, an additional fertilizer should be added to the soil to supply the trees and grass with sufficient available nitrogen, says James A. Vomocil, University of California soil scientist at Davis. Mr. Vomocil recommended an off-season cover crop or frequent additions of organic matter to keep the top soil free of large clods. The cost of a sufficient nitrogen supply for cover cropping might be as low as $5 per acre, he said. He added that cover crops use water and are thus probably limited to irrigated orchards.

Good Manager Plays Big Part in Fast Sales Growth of Texas Retail Store

The Stanton Chemical and Seed Co. of Stanton, Texas, has been in business only about two years, yet it is one of the leading fertilizer and insecticide retailers in the county.

There are several reasons for this. The main one was in the owner's selection of a manager. He induced Floyd Smith, swine grower and former government agricultural employee, to operate the store.

Mr. Smith has had training both in school and on the outside, he knows almost everyone in the county and has managed his own farm for several years. Also he has the type of personality that commands respect and makes friends.

After taking over the store, Mr. Smith set out to learn what was needed and how he could help solve the farmers' problems. He had seen irrigation come to this cotton-growing area and knew that small amounts of fertilizer were paying off. He also thought farmers ought to be using more of it, so whenever a customer came to the store, Mr. Smith talked fertilizer and explained why it was needed. From using 100 to 200 lb. per acre, growers were asked to try an extra hundred pounds.

"Now nearly everyone is using 300 lb. to the acre and getting good results," he said. "This year some of them will try 400 lb. per acre and we'll keep an accurate check on the results. Whenever we reach the optimum amount, that will be it. We certainly won't recommend a farmer do anything that fails to make him money."

Another thing, Mr. Smith wondered about was the soil tests being taken in the county. While they showed a deficiency in phosphorus and nitrogen, the potash content seemed to be adequate. However, Mr. Smith saw signs in the cotton fields that potash was definitely needed to grow better plants. He was so convinced of this that he began experimenting with fertilizer containing potash. His assumption proved to be right.

Now the two most popular kinds of fertilizer being used are 12-24-12 and 10-20-10. With the addition of potash in the mixture, cotton has fruited out better, put down a longer root system and withstands the dry, hot summer without wilting.

The firm does a large volume of business in insecticides. Mr. Smith knows the various kinds of cotton insects and what to recommend for them. Here also a knowledge of the area farms, kind of cotton grown and behavior of insects helps in making recommendations for poisoning.

In summing up reasons for the store's success, Mr. Smith said: "You've got to handle good products and know how to use them. Giving service to farmers has been our main reason for growth. So many of them don't know the contents of chemicals that they must depend upon someone who does know. Telling them the right things and backing up the merchandise, I believe, is the main reason we've done so well."

IDAHO FIRM

(Continued from page 9)

that's been in potatoes three years would be quite different than for one that's been growing alfalfa. When we get this, we can be of greater service to the farmer and be sure his fertilizer dollars are wisely spent."

The store is also getting into the custom spraying business. With two spraying rigs, one mounted on a tractor and one on a jeep, the equipment is now kept busy practically every week day of the growing season. The tractor rig is used to spray fields, orchards and small patches. This is charged for on an hourly basis at $2.50 an hour for field work. For spot spraying, the fee is $4 an hour.

The jeep sprayer is kept busy spraying the big irrigation ditch that parallels the river. It carries a lot of water, but also grows up quickly in grass and weeds. Mr. Olsen got the contract to keep down the vegetation chemically when he proved it was cheaper and more effective than by dragging long chains across it, as had formerly been done.

"We don't make much money except for the chemicals which are used at retail prices," Mr. Olsen said. "However, this is a nice profit item. Another way it pays is that everyone knows we are doing this work. They see our rigs every day, so when they need any work done or even want to buy insecticides or weed killers, they come to us."

Mr. Olsen has found that farm chemicals work in nicely with feed and grains. The farmers in the valley raise much livestock along with their crops, so they need a variety of merchandise.

They need feed, but they also need fertilizer. Most farmers like to trade at just one place if they can get what they want at a fair price. Also they need advice because no one person can keep up with every change in agriculture.

"We've got a well-rounded business now," said Mr. Olsen, "because we know what we're selling. I've had a lot of experience with feeds and poultry and livestock. Mr. Wolfe is handling the chemical part of it, and we've got a staff of employees who are well grounded in several phases of the business.

"I've found that a good store must do more than just sell. It's got to give a lot of personal service as well."

NURSERYMEN TO MEET

BERKELEY, CAL.—The annual Northern California Nurserymen's Institute will be held Jan. 30 at the University of California here.

THE BEST YOU CAN BUY!
Spread More — Save Money With A & D
FERTILIZER SPREADERS

Adams & Doyle fertilizer and limestone spreaders are first choice with custom spreaders, fertilizer dealers and large farm operators. Capable of spreading from 100 lb. up to 4 tons per acre. Precision built gear cases. Hood unfolds to 20 feet wide with open ends for 10 to 15 feet extra coverage.

- Spreads fertilizer, limestone.
- Easily operated by one man.
- Guaranteed for one full year.
- Field tested all over America.
- Costly maintenance eliminated.

Write for folder and prices.

ADAMS & DOYLE EQUIPMENT MFG. CO.
3900 BROADWAY QUINCY, ILL.

What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

Farms reporting in the recent U.S. bureau of the census survey showed that they increased fertilizer consumption by about 50% in the ten year period between 1944 and 1954. Industry leaders were quoted as looking on the future of fertilizer sales with optimism. The need for lowering unit cost of producing farm products will make fertilizer use an increasing necessity in the future.

Sam L. Nevins, vice president of Olin Mathieson Chemical Corp. stated that the adoption of NPK symbols for expressing plant food values would give manufacturers of chemical fertilizers the "greatest boom in their sales history." He said that the present system of reporting fertilizer components as oxides is confusing and unnecessary.

The Entomological Society of America in its annual meeting in New York, reported results of insecticidal experiments conducted during 1956 in various parts of the country. Systemics, granules, and soil insecticides were pointed out as being increasingly important in pest control.

Santford Martin, Jr. was appointed head of publications and director of publicity for the American Potash Institute, Washington, D.C., the Institute announced. He succeeds R. H. Stinchfield, who retired Jan. 1 after having held the position since the Institute was formed in 1935.

Carry-over stocks of pesticides as of Sept. 30, 1956, were larger than they were on the same date in 1955, the USDA announced. Carry-overs in the hands of basic producers increased more than did formulators' inventories, the report said. Some chlorinated hydrocarbons were up over 90%, whereas formulators' stocks increased only 20%.

The executive committee of the National Plant Food Institute said that it looks "with disfavor" on a proposed change in reporting the phosphate and potash content of fertilizers as "P" and "K", rather than P_2O_5 and K_2O. A resolution passed by the committee stated that the Institute should act as a clearing house and make available to all parties, including state officials and state legislatures, any information on the subject.

Despite the fact that fewer acres were used in agriculture in 1956, farm output in that period equalled previous records in 1948 and again in 1955. The 1956 crop was grown on the smallest acreage in 20 years.

The output of sulfur reached new highs in 1956, and exports of the mineral held near the record levels of the past few years. Consumption in the U.S. was estimated at 5,900,000 tons in 1956, as compared to 5,650,000 the previous year. Exports were expected to reach about 1,600,000 tons.

Fred M. Stewart, vice president and general manager of Agricultural Ammonia Service, Inc., Santa Paula, Cal., became president of the Agricultural Ammonia Institute on Jan. 1. He is the first westerner to head the Institute.

The Interstate Commerce Commission granted freight rate increases of 7% and 5% for eastern and western territories, respectively, to the railroads. Despite strong protests from the fertilizer industry, the increase was allowed. Observers in Washington and in other parts of the country predicted that this will force much of the industry to depend on trucks for both long and short hauls of materials.

The Tennessee Valley Authority announced that it had developed a process for shortening the time to produce superphosphate suitable for immediate use in mixed fertilizers, thus doing in 1½ hours a production job that would normally require weeks of curing.

Insect resistance was reported to be on the increase by speakers at the Cotton Production Conference held at Birmingham, Ala. in December. Stress was placed on the need for more research to find answers to many questions concerning resistance and other problems of insect control in cotton. Reports were also made on the progress made in experiments with systemic insecticides which were regarded as successful in 1956 tests.

That fertilizer tonnage is down 4.4% for the fiscal year of 1955-56, ended June 30, 1956, was estimated by the National Plant Food Institute. It said that consumption totaled 19,980,264 tons during that period as compared to 20,902,863 tons in the previous fiscal year.

Farmers, in a referendum vote on Dec. 11, rejected provisions of the soil bank, but observers in Washington said that this should not impair fertilizer sales in 1957.

Tests with systemic insecticides on cottonseed were reported as being successful in 1956 experiments. Two products were cited as being the best tested thus far. They were "Thimet" and "Bayer 19639."

A hearing before the Interstate Commerce Commission was held in Kansas City the last of November, giving the fertilizer industry an opportunity to testify against the rail carriers' demands for higher freight rates. Industry representatives indicated that the fertilizer economy could not tolerate further increases in hauling costs, and if rates were to be advanced, many firms would be forced to find other means of transportation.

Fertilizer meetings were hold at Fargo, N.D.; Montgomery, Ala.; St. Paul, Minn.; and Lafayette, Ind., with manufacturers, farmers, and dealers in attendance to take part in "short courses" in soils and fertility. The Ohio Pesticide Institute held its annual meeting in Columbus, and the American Phytopathological Society's annual convention was held at Cincinnati in December.

Texas Cotton Grower Conducts Profitable Test

Luther Bagwell of Gaines County, Texas, has definite proof that fertilizing cotton will pay off. Last winter he drilled his first irrigation well, and soon thereafter became confused about whether or not to fertilize the field.

"Some dealers told me it would make a nice profit," said Mr. Bagwell, "but some neighbors said no, it was a waste of money. Finally I decided to find out for myself by running some field tests."

Mr. Bagwell fertilized one part of the field with 400 lb. of 0-20-0 and 95 lb. of anhydrous ammonia to the acre. On another part of the large field he put down 200 lb. of 0-20-0 and 50 lb. of anhydrous ammonia. On the rest of the cotton land he used no fertilizer at all.

Pre-planting soil analysis showed that all the soil was just the same. He planted all the cotton from May 12 to May 15, and watered and cultivated it exactly alike. The fertilizer was put into the ground just before the cotton was planted.

As harvest ended, he found some remarkable results. The heavily fertilized acreage produced two and a half bales per acre. The medium fertilized acreage made one and a half bales per acre, while the cotton receiving no fertilizer made only three-fourths of a bale per acre.

"Along in August I was tempted to add some fertilizer to that untreated portion," Mr. Bagwell said. "The cotton turned yellow and several people told me the soil had exhausted its plant food. I could have made money by giving the cotton a shot of fertilizer, but this was an experiment and I intended to follow it out, even if it cost me money to do so."

"I know now what fertilizer will do," said Mr. Bagwell. "Some people will call me a liar, I know, but I really made $125 more clear profit per acre on that heavily fertilized area than where none was used."

This year Mr. Bagwell will fertilize all his cotton with 400 lb. of dry fertilizer and 100 lb. of anhydrous ammonia, and may even try more on some of it.

"Some people say it won't pay off," he smiled, "but they said the same thing about cotton last spring."

Mr. Bagwell is also trying another experiment. He has 20 acres of winter rye and will put on 200 lb. of fertilizer in the early spring. He will then plow it up and plant to cotton, to see what the results will be.

Maryland Nematode Loss Set at $12 Million

COLLEGE PARK, MD.—Nematodes are reducing Maryland crop yields an estimated 12 to 15%. Research workers at the University of Maryland Agricultural Experiment Station place the cost of this damage at about $12 million a year.

Nematologists in the unversity's botany department have taken soil and root samples from over 1,000 fields. No field was found to be free of plant-parasitic nematodes. More than 35 different types of nematodes were found, many of them unknown to Maryland prior to this survey.

WEED CONTROL

FARGO, N.D.—Effective weed control on two thirds of North Dakota's planted acreage could increase farm incomes in the state 40 to 50 million dollars, North Dakota Agricultural College authorities believe.

CUSTOMER ADVICE—Bill Craig (left), Fresno County Farm Supply Co. entomologist, and Floyd Sugliano customer, discuss soil conditions and merits of various alfalfa types.

California Retail Firm Triples Sales In Three Years

FRESNO, CAL.—Fresno County Farm Supply Co. more than tripled its annual sales in the past two years, L. H. Windsor, manager of the store reports. When Mr. Windsor began managing the firm in 1954, yearly sales totaled $211,000, and 1956 sales were more than $650,000.

Fresno County Farm Supply is equipped to give the farmer advice on his crops, from pre-plant analysis of soils to complete fertilizer information and insecticide protection of the final product. To give this service the firm takes full advantage of the field and research staffs of its suppliers in getting the latest information on new chemicals to help the farmer in control and production of his crops.

Recently the store added entomologist Bill Craig to the staff to train and counsel the three man field service team and to help farmers with insecticide and soil problems. Mr. Craig is a college trained agriculturalist with eight years experience in agricultural chemicals.

Mr. Windsor reports that he is setting his sights on a $1 million sales volume in 1957.

California Retail Sales Show Gain in Second Quarter of 1956

SAN FRANCISCO—Sales of farm equipment and supplies, including all types of agricultural chemicals, jumped by more than 8% through retail stores in California between the second quarter of 1955 and the corresponding quarter in 1956.

The State Board of Equalization estimates sales for the three months between April 1 and June 30, 1956 at $85,122,000 as compared with $78,615,000 for the same period of last year. The quarter represents the seasonal high, and sales during those months this year are equal to almost one third of the total annual sales for 1955.

An especially heavy gain of over 12% was registered by dealers who supply farm and garden materials to home owners, although the more general type of store supplying the farm community itself also registered a significant gain—about 6½%.

The first quarter of this year has already demonstrated a sales increase slightly less than the second quarter totaling over $71,000,000 as compared with about $66,000,000 for the same period in 1955, and indicating the possibility of a record year.

The figures are in harmony with those of commercial fertilizer sales reported by another agency, which also demonstrate the possibility that 1956 was the biggest year all round in California for the agricultural chemical industry.

Doing Business With

Oscar & Pat

By AL P. NELSON
Croplife Special Writer

Ken Enders, a dairy farmer who ed on Norwegian Rd., finished raping the snow from his yard with e plow on the front of his light uck, then went into the farm kitch- for his mid morning cup of coffee.

"Oh, Ma," he yelled, taking a pack- of mail and a newspaper from his ackinaw pocket and tossing it on e kitchen table. "I brought the mail Looks like there's a letter from ur sister in New Hampton."

"All right," shouted his chunky fe from the depths of the cellar here she was getting some meat out the deep freeze. "I'll be right up. here's fresh coffee on the stove sim- erin'."

Ken Enders took off his coat and t, rubbed his scratchy hands to eater warmth, then poured himself cup of coffee.

He had sucked a couple lumps of gar with his coffee by the time his ump wife got upstairs and opened r sister's letter. Then, warmed by e coffee, Ken reached for the week- newspaper, opened it and began ading.

"Oh, my," Mrs. Enders commented oud, "Beulah's had a bad cold and ough, and Fred's got rheumatism d again."

"Well, that's too bad," her husband plied. "Why don't those two let the red man run the farm for a month nd go to Florida for a vacation? hey got the money. But, no, they otta have more."

Mrs. Enders lips tightened. "Ken, ow you talk. Why don't you go to lorida? We've been farmin' as long s Beulah and Fred."

"Because we got two boys in ag chool, and Beulah and Fred's one aughter got married a long time go, that's why. They got fewer ex- enses than we got. Hey, what's his?"

Mrs. Enders looked up from the st page of the letter. "What's hat?" she asked.

Ken Enders began to chuckle. "Oh, man, I wonder if Oscar Schoenfeld has seen this?"

"Seen what?"

"This full page ad in the paper this week," grinned her husband. "That doggone Pat is at it again, and I'll bet Oscar is throwin' a fit. You know how tight he is."

"I don't see how his wife can stand him," Mrs. Enders said. "Nobody likes to have her come to the church aids any more, because she will eat and eat, but never invite the aid to her house for a meeting. What's her husband and Pat done now?"

"Oh, they are starting a big lime campaign," Ken Enders replied. "They point out that most farmers use only about 20% of the lime they need, especially in acid soils like we have in this county."

"Well, what's so startling about that ad?" asked his wife.

Ken Enders chuckled. "Well, every farmer who puts in an order for lime, based on 50% of required lime per acre for his farm, gets two tickets for big regular meals at the Majestic Hotel!"

"No!" Mrs. Enders was full of disbelief. "You mean, free meals at that swell place?" She grabbed the paper and looked at the ad, her eyes widening. "Well, I declare. It is true, Ken. And look at the fancy fare."

"Yip," grinned Ken. "The free tickets are honored every Tuesday night. One week there will be German dishes like casserole of hasenpfeffer, schnitzel a la Holstein, wiener schnitzel and sauerbraten. Then the next there will be a Danish meal with roast duck, stuffed with prunes and apples, and side dishes with cooked red cabbage and Danish pudding."

"Yes, and then on other weeks there will be a Polish dinner with Polish sausage, an Irish dinner with boiled potatoes, boiled cabbage and ham hock. And they even have an Italian dinner one week with Ravioli and pizza pie." Mrs. Enders looked at her husband. "Ken, what's pizza pie?"

Her husband shrugged. "Dunno. I thought it was a Greek dish, not Italian. A Greek over at Gibson City asked me in his restaurant one time. Wanna piece a pie? Guess it's the same in Italian."

Mrs. Enders studied the ad again. Then she turned to her husband. "Ken, do we need any lime?"

Ken chuckled. "Well, I guess we could use some more, according to my last soil test. I'm buying lime every year from Oscar and Pat. Guess I could lump requirements together and qualify for free tickets. Would you like to go out to eat at the Majestic Hotel, Ma?"

Mrs. Enders nodded. "I think I would—just once, Ken. I've always thought it too swell for us, that big dining room, with the high ceilings, real linen tablecloths, the fancy silverware, and the little lights on each table. And the girls always wear such clean, starched dresses."

Ken Enders laughed. "Well, all right, Ma," he said. "We'll go. We've got it comin' to us. I might even blow us to a show afterward. I never seen that wide screen they been ravin' about. Pick out the dinner you want and I'll see Pat about the tickets."

"I think I'll pick the Italian dinner," Mrs. Enders said. "I guess I've tasted German, Danish and Irish cooking, and I don't think I'll like Irish ham hocks. I sorta want to try that pizza pie."

"Me, too," said Ken. "Make mine apple with two scoops of strawberry ice cream. But I'd better ask Pat for those tickets when Oscar isn't around. Oscar would try to make me pay for the tickets and charge 2% extra for the time it takes to handle them at the office."

Mr. and Mrs. Enders, frugal though they were, laughed about Oscar and what he might do until tears came to their eyes. Then Ken said, "Well, I guess I'll take a look at the stock. Can't gossip all day."

"Now, remember," Mrs. Enders called, before he closed the door. "Don't let Pat sell you too much fertilizer when you go to buy that lime. I've a hunch that's what he'll try to do."

"I know he will," grinned Ken, "but I'll tell him I ain't got no money to buy extra fertilizer. I'll tell him I'm gonna divorce you and you want a big alimony and I'll have to watch my pennies."

"Oh you!" cried Mrs. Enders with some exasperation. "Always jokin', and about things like that. What will people—" But the door closed and Ken was gone so she broke off the sentence and shrugged her shoulders.

9 Firms Register for California Sales

SAN FRANCISCO — Twenty nine rms have registered to sell commer- al fertilizers in California between ept. 17 and Dec. 17, according to he bureau of chemistry of the State epartment of Agriculture.

Four of these companies consist of anches of the Agriform Co. with utlets in Holtville, Corcoran, Wasco nd Woodland, Cal. Of the 29, six- en firms are located in the northern alf of the state, 11 in southern alifornia and the remaining two ave home offices in Portland, Ore., nd in Wapato, Wash.

In addition to these 29, 12 firms ave registered to sell agricultural inerals during the same period, in- uding some overlapping, such as he four Agriform branches. Six of he 12 are located in southern Cali- rnia, five in northern California, nd the 12th plant is the Kelly- estern Seed Division of the Utah ooperative Assn. in Salt Lake City, tah.

WEED CONTROL

RICHFIELD, UTAH—More than 400 acres of private land in Sevier ounty, Utah were sprayed for weed ntrol in 1956, Lee Guymon, county gent, has reported.

JOHN DEERE VITREA — 45% NITROGEN

Be sure of fastest service and top quality urea nitrogen when you order field proven John Deere **VITREA**. A hard-hitting "farm geared" advertising program is helping to pave the way to bigger **VITREA** sales for you.

JOHN DEERE UREA-AMMONIA SOLUTIONS

Let a qualified John Deere technical representative show you how to save money and at the same time improve the physical condition of your fertilizer by using John Deere urea-ammonia solutions . . . **AVAILABLE NOW!**

JOHN DEERE ANHYDROUS AMMONIA

Get prompt delivery by ordering John Deere Ammonia this year.

Write, wire or phone today . . .

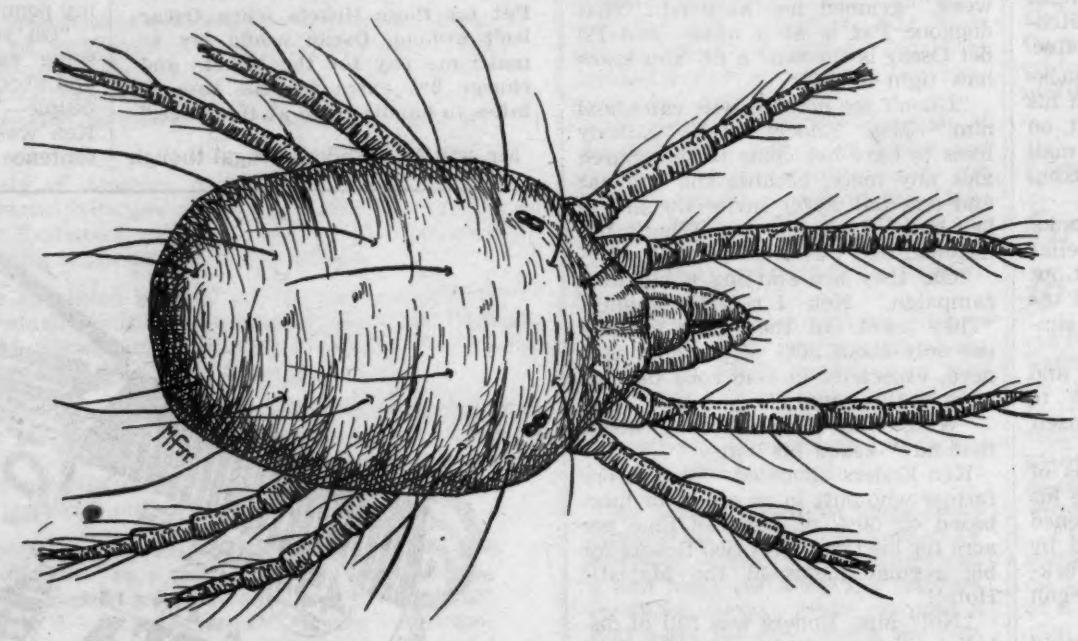
JOHN DEERE

Grand River Chemical Division of
DEERE & COMPANY

PRYOR, OKLAHOMA • PHONE 4000

BUG OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board



Two-Spotted Spider Mite

How to Identify

Adult male spider mites are slightly smaller than the female, being approximately 1/80th and 1/60th inch long, respectively. They are eight-legged, pale-yellow or greenish color. Two dark spots show through the transparent body wall of the bug, and the body itself is oval and sparsely covered with spines as illustrated.

Habits of Spider Mite

The female mite, after mating, lays from 2 to 6 eggs a day, totaling some 70 or more during her lifetime. The eggs are minute, shiny, and spherical in shape. They are usually attached to the underside of leaves, in a web spun by the mite. These eggs hatch in less than a week into young which closely resemble the adults, except that the offspring have only three pairs of legs. Male mites molt only two times in their growth period, but females molt three times. A complete generation is grown every month or so, but since these generations overlap, all stages of the mites may be found in the greenhouse at any time.

Damage Done by Mites

Vegetable crops most seriously damaged by the mite are beans, corn, tomatoes, eggplants, celery and onions. Practically all greenhouse plants may be attacked by mites, but some of the most susceptible are cucumbers, tomatoes, carnations, chrysanthemums, violets and roses. Out-of-door ornamentals also suffer damage. These include cedars, hydrangeas, and roses. The tiny pest pierces the epidermis of the leaf with its sucking mouth parts, causing heavily-infested plants to lose their vigor and die. Lightly-infested leaves have pale blotches showing through the leaf from the underside, but heavier infestations may cause the entire leaf to appear light in color and to dry up.

Control of Mites

Since much of the mite damage is done to greenhouse plants which are not intended for food or feed, more latitude is allowed in the matter of toxic residues on plants. Among materials mentioned in the literature for the control of these pests, are sulfur, tetraethyl pyrophosphate, methyl chloride, parathion, acetone, azobenzene, diatomaceous silica, and sodium selenate applied in various forms. Control of rank growth of weeds in the vicinity is also desirable to prevent the mites from having convenient harboring places.

The above illustration furnished by artist, Marvin Frost, Jr.

Previous "Bug of the Week" features have been reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.

NORTHEAST FIRMS

(Continued from page 1)

ll Chemical Co. It will operate its dustrial chemical and wholesale int business, and nickel foundry der the name of Apothecaries Hall , division of the Hubbard-Hall emical Co. A subsidiary, Connecti- t Chlorine Products, Inc., will con- ue to operate under that name.

The merger will give the new com- ny four fertilizer factories, central- located in the heaviest consuming eas in southern New England. The ants are at North Haven, Portland d East Windsor, Conn. and South eerfield, Mass. Warehouses for the ndling of agricultural and indus- ial specialties will be maintained at her points.

Apothecaries Hall Co., which was unded in 1849 as a retail drug store s had no connection with the drug ade for some years. It has been ac- ve in the manufacture of fertilizer East Windsor, Conn. and in the anufacture and distribution of other gricultural chemicals from its East indsor and Waterbury plants.

At its Waterbury plants it also dis- ibutes industrial chemicals, and emicals and equipment for electro- ating, wholesale paints, and manu- ctures numerous items for the in- ustrial and agricultural trade. The ompany owns and operates one of e few nickel foundries in the coun- y at Waterbury, where its casts on-ferrous anodes used in electro- ating. Its wholly-owned subsidiary, onnecticut Chlorine Products, In- orporated, specializes in packaging quid chlorine and the manufacture chlorine solutions.

The Rogers & Hubbard Co. located Portland, Conn. has been engaged fertilizer manufacturing and dis- ibution since 1878. It has also been large factor in the sales of other gricultural chemicals and in the anufacture and distribution of the ro-Fast line of fertilizer and agri- ultural chemicals for the home gar- en.

Woodruff Fertilizer & Chemical orks, Inc. located in North Haven, onn. is the successor to the Wood- ff Fertilizer Works which has been ctive in the manufacture of ferti- zer for some 20 years.

The Old Deerfield Fertilizer Co. of outh Deerfield, Mass. was founded 1926 and is located in the heart the tobacco, onion and potato acre- ge in the upper Connecticut River alley.

Directors of the new corporation are William L. Bradley, Clarence F. Clark, Stanley M. Cooper, B. B. Fall, Chauncey P. Goss, Harlan H. Griswold, Edward R. Jones, Frederic R. Kellogg, James R. Rossman, J. Warren Upson, Levi Wilcox and Samuel P. Williams, 3rd.

Officers elected by the directors in- lude Frederic R. Kellogg, president; dward R. Jones, executive vice presi- ent and treasurer; B. B. Fall and ames R. Rossman, senior vice presi- ents; Frederick S. Foster and John anford, vice presidents; E. S. Davis, ., secretary and assistant treas- rer; Arthur F. Kingsbury, Jr., Ever- tt D. Marvin, Jr. and T. Z. Voyda, ssistant vice presidents; W. H. Stahl, ssistant secretary and Benjamin S. ouglas, assistant secretary and traf- c manager.

TAKES INDIA ASSIGNMENT

UNIVERSITY PARK, PA. — Ralph Garber, director of the U.S. Region- l Pasture Research Laboratory at he Pennsylvania State University, as resigned to accept an appointment s professor of plant breeding with he University of Illinois for a two- ear assignment in India. Dr. Garber ill help coordinate teaching, re- earch and extension in the field of lant breeding at Madhya Bharat ollege, Gwalior, India. Although lo- ated at Gwalior, he will have smiliar uties at other state colleges in the orth Central Region of India.

Weed Battle in Probing Stage, Oregon Conference Hears

BEND, ORE. — The battle against weeds in Oregon is still in the probing stage, despite great gains in the development of herbicides in recent years.

Oregon Weed Conference members, in Bend for their fifth annual convention, were reminded of this by W. F. Furtick, Oregon State College farm crops department specialist. He told the large group that much remains to be done in the field of research and that "big holes" exist in the weed control research program.

Mr. Furtick guided a panel discussion dealing with field crop weed research in the state.

Various speakers told of great gains made in the development of chemicals for the eradication of various weeds, but it was agreed that research is only on the threshold to conquest of pests that annually take a heavy toll of crops.

Rex Warren, Corvallis, conference secretary, discussed the spraying of crops, forest and ranges in Oregon. Walter Dahms of the Deschutes research center touched on the control of brush in forest areas. Vegetable weed research was discussed by Roland Laning of Oregon State College. W. Dean Boyle of the U.S. Bureau of Reclamation, Boise, Idaho, discussed ditchbank and aquatic weed control.

Frank McKennon from the state department of agriculture reviewed how the weed control districts are formed and outlined laws governing such districts. Roy Stevenson, Madras, presided at the conference.

HEADS EXTENSION SECTION

TUCSON, ARIZ.—Charles U. Pickrell, director of the Agricultural Extension Service of the University of Arizona, has been elected chairman of the Extension Section of the Land Grant College Assn.

A. V. Phillips of Bemis Bro. Dies

ST. LOUIS—A. V. Phillips, retired director and a veteran of 62 years service with Bemis Bro. Bag Co., died recently following complications resulting from a fall. He was 88 years old.

Mr. Phillips retired from active service and resigned from the Bemis Bro. board of directors in 1953. He joined the firm in 1891 at St. Louis, and was made a director in 1911. He was a vice president from 1912 to 1946 and headquartered most of the time in Boston. He made numerous trips to India in connection with burlap supply, and from 1925 to 1932 spent much of his time there.

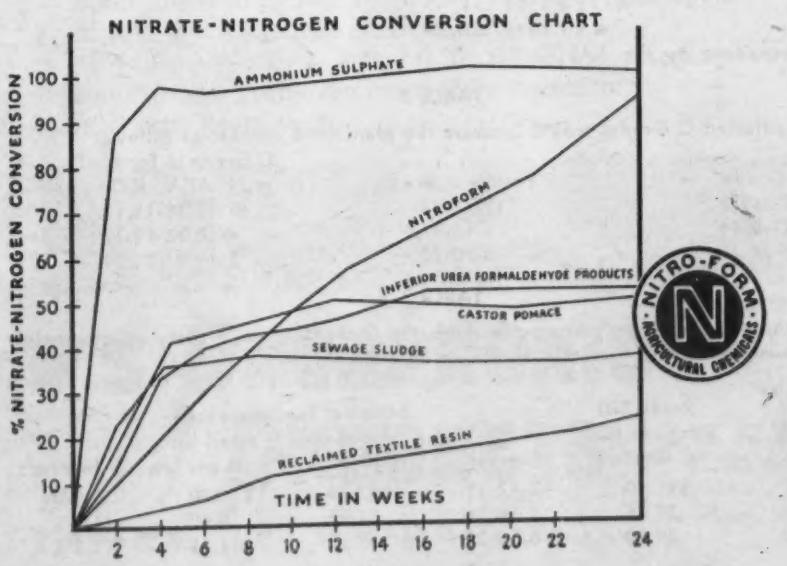
GRASSHOPPER CONTROL

AMES, IOWA—Harold Gunderson, Iowa State College entomologist, estimates that more than 2½ million acres in Iowa were treated for grasshoppers in 1956.

More and More Specialty Fertilizer Manufacturers are using NITROFORM®

Nitroform has so many distinctive advantages it's no wonder more and more fertilizer manufacturers are using this solid Urea-Form in their mixes.

Don't be misled by other forms of urea-formaldehyde. Make sure that the Urea-Form you are using in specialty fertilizers passes the accepted A. I. test for nitrogen availability. Results count. The chart below illustrates the release of available nitrogen of Urea-Form in comparison with less desirable substitutes.



Why NITROFORM?

- it mixes easily . . . is now available in a colored granular or powder form.
- is clean, odorless, non-leaching and non-burning.
- is economical, and offers larger profits ir mixed fertilizer sales.
- is field test proven . . . to meet specific nitrogen requirements of Urea-Form.

Write now and let us give you complete facts and figures on how NITROFORM can increase your sales and profits.

NITROFORM
AGRICULTURAL CHEMICALS, INC.
A DIVISION OF
Woonsocket Color & Chemical Co.
92 Sunnyside Ave. • Woonsocket, Rhode Island

Fertilizer Manufacturer Says Change To Elemental Guarantees Places the Industry in Bad Light With Customers

By E. D. Kingsbury

Kingsbury & Company
Indianapolis, Ind.

The proposal of the American Association of Fertilizer Control Officials to change the guarantees of plant food from an oxide basis to an elemental basis demonstrates either:

(a) Lack of understanding of the problems presented to the fertilizer industry, or

(b) Disregard for these problems. (I think it is a lack of understanding rather than a deliberate disregard for our problems.)

Let us start with the consumer and work backward. Without a prolonged period of prior education, such a change would create bitter resentment against the fertilizer industry. If we are forced to reduce our numerical guarantees to conform to the elemental basis, the average farmer will think he is being "gypped." He is not going to understand why we are "lowering" our guarantees and, at the same time, increasing prices. We, in the fertilizer industry, are the ones who will have the explaining to do, not the scientists.

Now, let's take a look at the dealer or distributor of fertilizer. He would be "sitting in the middle" of this problem. His customers would be asking him "why this lower guarantee (or higher price)?" The distributor of fertilizer already has plenty of problems such as competitive prices, freight allowances, credit extension, collections, proper grade recommendations to his customers, granular versus pulverized, etc., etc. Why saddle him with an additional burden at this time?

The AAFCO may not realize it but many distributors are about "fed up" with handling fertilizer anyway, and a move such as this could easily be "the straw that broke the camel's back." It is this speaker's considered opinion that this proposed change, if adopted, would cause many dealers to discontinue handling fertilizer. Replacement of these distributors would mean increased sales expense to the fertilizer industry and eventually this would have to be reflected in increased prices to the consumer.

As manufacturers, we would be faced with several serious problems, as outlined in tables 1, 2, and 3. A 12-12-12 grade would become 12.00-5.24-9.96, by using conversion factors, and the adjusted grade would be 12-6-12. The adjusted ratio therefore would be 2-1-2 as compared to the previous grade of 1-1-1. Similar situations would arise out of other grades, as indicated in the tables.

Obviously, we will have a lot of explaining to do if we lower numerical guarantees, and, at the same time, raise prices 10 to 13%!

Where do the agronomists fit into this picture with their recommended grades and plant food ratios? It has only been in the past few years that the agronomists in the Middle West have been able to "get together" on a list of grades acceptable to all. Now it is proposed that these grades and ratios be thrown out the window. The agronomists will be asked to start all over again. Is this fair? Is it necessary? Furthermore, all text books mentioning grades would have to be rewritten.

There are many phases to the agronomic problem. One is the concentration of salts. Until the implement people come up with better fertilizer attachments, I am wondering if we haven't gone far enough on concentration. In fact, I sometimes feel that we are getting the cart before the horse. Furthermore, it is a well-known fact that normal superphosphate contains large quantities of calcium and sulfur whereas triple super, phosphoric acid and diammonium phosphate do not.

EDITOR'S NOTE

Croplife's issue of Dec. 31, 1956 carried the text of a paper presented at the recent Indiana Fertilizer Conference by Dr. Vincent Sauchelli, favoring the proposed change in fertilizer guarantees to the elemental, rather than oxides. The paper published here takes the other side of the question in rebuttal to Dr. Sauchelli's stand. This paper was also presented at the Indiana conference. Additional viewpoints on both sides of the question will be carried in subsequent issues.

Experiments in North Carolina have proved conclusively that normal superphosphate was superior to triple superphosphate where each was used as the sole source of phosphorus on the same fields over a period of years. Experiment station officials attributed the difference to the calcium and sulfur contained in the normal super. It is entirely possible that we can be "penny wise and pound foolish" by going to such high concentrations that we eliminate normal superphosphate.

As Dr. W. L. Hill, USDA, observed at the Round Table in Washington, Oct. 16-18, "calcium and sulfur should not be regarded as 'secondary' elements." On the contrary, he described them as being important factors in plant food nutrition. "In making the high analysis products," he said, "calcium is 'squeezed out,' which results in mediocre growth responses on the part of crops fertilized by such materials under certain conditions."

Of course, it can be argued that the farmer can add supplemental calcium in the form of limestone or dolomite and that elemental sulfur can be applied, but these applications mean extra trips over the field and we know from experience that few farmers will follow this practice. Furthermore, it costs him extra money whereas there is no extra charge for the calcium and sulphur contained in normal superphosphate, which, incidentally, is in quickly available form.

Please do not misunderstand me. Your speaker has always believed in increasing the plant food content whenever it was practical to do so. Long before Purdue or any other state college began advocating high analyses, we were already making them and selling them. Thirty years ago our company was making a full line of "double strength" fertilizers. We made a 4-24-4 to replace the then-popular 2-12-2. We made 4-24-12 to replace 2-12-6, 0-20-20 to "double" 0-10-10, etc. We hope we will never be accused of blocking progress but let's be sure that it IS progress.

Don't forget that, if left alone, competition will take care of the increase in plant food but it will do it gradually, within the framework of practicality as to raw materials, manufacturing methods, etc. It will come by evolution rather than revolution, which is almost invariably the sounder way. During my time in the fertilizer business the average guarantee of plant food, on an oxide basis, has increased from approximately 12 units to 37.5 units, or more than tripled.

The AAFCO lists the following advantages for the proposed change:

1. Farmers will use, and the fertilizer manufacturer will sell, more plant nutrients as a result of evening out minimum grades and ratios. Although the cost per ton may be increased slightly, the price per unit should be lower.

ANSWER: If the farmer wants a higher analysis he can already get it. Examples: 5-20-20 vs. 3-12-12; 12-12-12 vs. 8-8-8. We do not have to resort to subterfuge.

2. Simplify and unify fertilizer educational program relative to plant nutrients.

ANSWER: Simplification and unification can be achieved now, if we will all talk the same language. Aside from the pure scientist, (and he can use a conversion table) who cares whether we talk in terms of K or K_2O? Incidentally, when speaking of ratios, we refer to our present 0-20-20 as an 0-1-1 ratio. If we change this to an 0-1-2 (as proposed) is the farmer going to think he is getting twice as much potash? Or should we call it an 0-½-1?

3. Should reduce to a minimum, number of ratios and grades.

ANSWER: We fail to see how this move would affect the number of ratios and grades, one way or the other, UNLESS we get into guarantees of water solubility of phosphorus, or sources of plant food in which case we will INCREASE the number of grades and probably the number of ratios.

4. Ratios on elemental basis will be formulated by use of same common denominator.

ANSWER: Possibly a slight advantage but certainly not a critical point.

5. Will standardize national methods of stating guarantees of plant nutrients.

ANSWER: Methods of stating guarantees can be standardized without going to elemental phosphorus and potassium.

6. Represents progress.

ANSWER: Does it really represent progress or merely confusion?

In investigating the history and background of this movement, it appears that it was initiated by a group of scientists with the best of intentions and no ulterior motives. Nevertheless it was by men without much, if any, practical experience in the manufacture of fertilizer. Probably everyone in this room has, at one time or another, had an idea which looked very good on paper but which didn't pan out in practical application. I have had many such ideas and I call them "brainstorms." I am not opposed to brainstorms because I am not opposed to thinking. Brainstorms stimulate thinking and even if they don't work out they serve a useful purpose. The only danger with a brainstorm is that the originator or proponent may become obsessed with the rightness of his idea to the point of being blind to argument against it.

We respectfully suggest that the AAFCO has a much more pressing problem than the proposed change from oxide to elemental guarantees. This problem is improved sampling and improved analytical methods. Improved sampling would unquestionably eliminate some of the radical deficiencies and overages now attributed to segregation. Segregation is a chronic headache to the fertilizer manufacturer and I am sure that I speak for the industry when I say that we would welcome suggestions from the Association which might help us whip this problem.

A study of Inspection Report 2, April, 1956, published by Purdue University shows certain definite patterns in analytical results. I will mention only one here. In the 1-1-1 ratios there is a consistent pattern of a deficiency in nitrogen, with an overage in APA and K_2O. Surely, out of the tens of thousands of tons of these grades produced by various manufacturers we can't all be wrong all the time! Why can't the laboratories get closer than they do?

During my 36 years in the fertilizer business we have seen several changes made in the "official" methods used for the determination of K_2O and APA. In every instance that I can think of these changes have resulted in an increased recovery of plant food. We therefore respectfully suggest that the methods now used for the determination of nitrogen be reviewed. Current methods may have been adequate when only solid forms of nitrogen were used.

TABLE 1

A Current Grade	B Same plant food guaranteed on an elemental basis*	C Adjusted Grade	D Adjusted Ratio†	E Previous Ratio
12-12-12	12.00-5.24- 9.96	12- 6-12	2-1-2	1-1-1
4-16-16	4.00-6.98-13.28	4- 8-16	1-2-4	1-4-4
5-20-20	5.00-8.73-16.60	5-10-20	1-2-4	1-4-4
0-20-20	8.73-16.60	0-10-20	0-1-2	0-1-1

*Using the following conversion factors:

$P_2O_5 \times 0.4364 = P$
$P \times 2.2912 = P_2O_5$
$K_2O \times 0.8301 = K$
$K \times 1.2046 = K_2O$

†Ratios proposed by the AAFCO.

TABLE 2

The adjusted C Grades would increase the plant food content as follows:

C Grade	Former A Grade	C Grade in Terms of N APA K_2O
12- 6-12	12-12-12	12-13.75-14.45
4- 8-16	4-16-16	4-18.33-19.27
5-10-20	5-20-20	5-22.91-24.09

TABLE 3

On the basis of today's pricing methods the C Grades would carry approximately the following retail list prices in the State of Indiana:

C Grade	Retail List price per ton C Grade	A Current	Retail List price per ton A Grade (Fall 1956)	Increase in retail list Prices per ton	% Increase
12 -6-12	$91.10	12-12-12	$82.90	$ 8.20	9.9%
4- 8-16	79.45	4-16-16	71.05	8.40	11.8%
5-10-20	99.30	5-20-20	87.65	11.65	13.3%

they are obviously not adequate that large quantities of nitrogen tions and/or anhydrous are being Right now the industry has ty of problems with granulation. are having to learn new manuring methods.

etting back to the proposed nge, the resolution adopted by the FCO in Washington, D.C., Oct. 1956, reads as follows:

THEREFORE BE IT RESOLVED the Association of American tilizer Control Officials recomds to the respective states that essential to American agriculture each state law to be amended to nit, by July 1, 1960, such change a gradual but uniform basis as vided in the Model State Fertiw Law." The word "essential" reminds me of Mark Twain's ark when informed that a certain spaper had reported his death. is," said Twain, "is a slight ggeration."

B. Beaird Co. erges with American achine & Foundry Co.

HREVEPORT, LA.—J. B. Beaird Inc., maker of anhydrous amia storage equipment for the fer-er trade, has merged with Amer-Machine & Foundry Co., accordto an announcement by the ird firm. The merger became ef-ive Dec. 26, 1956.

he move involved transfer of 10,-shares of Beaird Company stock approximately 155,000 shares of F stock, a 15-to-1 transaction.

It was announced that the J. B. aird Co. will continue to do busiss under its present name, and t no changes in operating policy personnel are contemplated. The esent officers will retain their sitions. J. Pat Beaird is president d general manager, and Charles Beaird, vice president and astant general manager.

ther officers of the company inle J. G. O'Brien, vice president treasurer; Edward F. Neild, Jr., retary; Justin R. Querbes, Jr., asant secretary, and C. N. Wibker, president.

he Beaird firm was founded in 8 by the late J. B. Beaird, as the n-Beaird Welding Co., a partnerp comprising Mr. Beaird, H. H. n and Charles E. Beaird.

The firm continued in its welding d machine tool operation until out 1923 when special facilities the manufacture of oxygen were talled. The company became the B. Beaird Corp. in 1929 and conued to expand.

uring the war years, the firm hanl important defense contracts. ut 800 persons are now employed Beaird. In addition to its main ration at Shreveport, Beaird also facilities at Stockton, Cal. and nton, Iowa.

merican Machine & Foundry Co. 56-year-old firm which operates e 36 plants manufacturing 85 difent products. It is headed by Morel Patterson, president and chairn of the board. His vice chairman Gen. Walter Bedell Smith, chief of ff to President Eisenhower during rld War II and former ambassador Soviet Russia.

roducts of AMF include tobacco chines, bowling equipment, bakery ipment, tricycles, bicycles, elecnic equipment (including missile aircraft products), oil well drilland recovery machinery, motors, erators and numerous other prods for industry.

erger of the two companies culates the negotiations of several nths.

INNESOTA SHORT COURSE

T. PAUL—A Weed and Seed Inctors' Short Course is scheduled Jan. 14-18 at the University of nesota.

Minnesota Scientist Explains the Atom In Weed Research

ST. PAUL—A University of Minnesota scientist explained to Farm and Home Week visitors Jan. 8 how the atom and the Geiger counter are helping farmers in their battle against weeds.

A. J. Linck, plant physiologist, said that radioactive isotopes are important "tracers" for showing scientists how chemical weed-killers move through plants.

In research soon to get underway at the university, Mr. Linck said that he and his co-workers will spray radioactive amino triazole on perennial weeds, such as Canada thistle, quackgrass and field bindweed.

"With a Geiger counter, we will be able to tell how far the chemical moves into the root system. We know that amino triazole will kill the above-ground parts of weeds, but we don't know how much of the chemical goes into the roots under different environmental conditions. And it takes a good root kill to clean out any perennial weed," Mr. Linck said.

"Also, radioactive isotopes will help us learn the fate of the chemical molecule. Again with the Geiger counter, we can tell, after certain time periods, if fragments of amino triazole still have any effect on the plant."

Radioactive "tracers" will improve this research, Mr. Linck said, because they make it possible to study smaller quantities of chemical molecules. By conventional chemical analysis methods, it takes larger amounts of chemical in the plant before scientists can measure it, he said.

Mr. Linck explained that this research is part of the "Atoms for Agriculture" project—financed by a $100,000 research grant to the University by the Northern States Power Co., Minnkota Power Cooperative, Inc., Otter Tail Power Co. and the Central Power Electric Cooperative.

Velsicol Announces New Phosphate Insecticide

CHICAGO — Velsicol Chemical Corp. has announced that it will have technical Methyl Parathion available for the coming growing season.

According to J. F. Kirk, vice president in charge of sales, research results reported last month at the National Cotton Production Conference at Birmingham indicated that Methyl Parathion will be used during 1957 to control boll weevils in areas where resistance has developed to BHC and other chlorinated hydrocarbon insecticides. Methyl Parathion is also reported to be effective in controlling mites and aphids on cotton and other crops.

Velsicol Corp. is one of the oldest producers of chlorinated insecticides. Its products include technical endrin, heptachlor and chlordane. Manufacturing plants are located in Memphis, Tenn., and Marshall, Ill.

RIGID QUALITY CONTROL

TC TENNESSEE CORPORATION

TRIPLE SUPERPHOSPHATE

Fine Texture, Small Particle Size For Maximum Ammoniation-Granulation

Our thirty years' background of producing Triple Superphosphate gives us a know-how that is surpassed by none. Through our constant research program and our close relations with the fertilizer industry, we have maintained over the years, an exacting chemical and physical control program to insure that only the highest quality Triple Superphosphate will bear our label.

From the raw materials to the finished product, step-by-step in each process, rigid quality control is maintained to deliver to you a Triple Superphosphate of fine texture, small particle size, 46% available P_2O_5, natural air cured, pre-shipping conditioned, ready for immediate inclusion into your processing.

There's a BRADLEY & BAKER office near you. Their representative would be pleased to consult with you on your requirements and to advise on your most convenient delivery routings.

RIGID QUALITY CONTROL
Through Six Basic Chemical and Physical Analysis

HIGH WATER SOLUBILITY
High Water Solubility is a Characteristic of all 3 Grades

RUN-OF-PILE
Fine Texture, Highest Porosity, Large Surface Area, Small Particle Size, for Maximum Ammoniation-Granulation.

GRANULAR
Dust Free, Free Flowing, Uniform Particle Size, Medium Hardness, No Bridging Over, for Direct Soil Application.

COARSE
For Intermediate Ammoniation to Produce a Semi-Granular Product. Also Affords Excellent Compatable Mixing with Granular Potash, for Minimum Segregation, in Alkaline Grades.

U.S. PHOSPHORIC PRODUCTS
TAMPA, FLORIDA

Division TENNESSEE TC CORPORATION

SALES AGENT:
BRADLEY & BAKER
155 East 44th Street—New York 17, New York
DISTRICT SALES OFFICES:
Atlanta, Ga. Indianapolis, Ind. St. Louis, Mo. Norfolk, Va.

ORTHOCIDE CONGRESS—Scientists representing 23 nations conferred in Rome recently at the Fourth International Congress on Orthocide, held under the auspices of California Spray-Chemical Corp. Earphone equipment made possible the simultaneous translation of speeches in several languages. Pope Pius XII is shown in the lower photo holding audience with agricultural researchers attending the congress. To the right of the Pope are Norbert Van Buren, president, California Spray-Chemical Company Francaise, Mrs. Arthur W. Mohr, and Mr. Mohr, president, California Spray-Chemical Corp.

Scientists from 23 Nations Attend Orthocide Congress

RICHMOND, CAL.—Scientists from 23 nations attending the Fourth International Congress on Orthocide held in Rome, Nov. 26-Dec. 1, under the auspices of California Spray-Chemical Corp., were honored by an audience with Pope Pius XII who paid high tribute to the importance of research work in the field of agricultural chemicals.

Pope Pius traced the advances in the development of fungicides since the formulation of "the pulp of Bordeaux" in 1879 and spoke of the vital importance of disease controls to agriculture in Italy and elsewhere.

"By bringing a positive contribution to this field, by making yourselves auxiliaries of the farmers who often have to contend with difficult economic conditions, you deserve their gratitude, and you are supporting in a very opportune manner a human activity abounding in spiritual content and apt to conserve and to increase the moral values which make the strength of a nation," the Pope concluded.

United States representatives to the Congress included Arthur W. Mohr, president, and Dr. T. W. Reed, research and development department of California Spray-Chemical Corp.

The International Orthocide Congress, inaugurated by the corporation's European subsidiary, California Spray-Chemical Company Francaise, is conducted in the manner of United Nations Assembly meetings with earphone equipment and simultaneous translation of speeches in several languages.

The Congress offers research men representing agricultural chemical companies of all nations opportunity to meet for discussion of crop disease problems and exchange of information relative to the use of captan.

Dow President Sees Keen Competition, High Output in 1957

MIDLAND, MICH.—The business outlook for 1957, in the opinion of Dr. Leland I. Doan, president of the Dow Chemical Co., is typified by high employment, high levels of production and intense competition with some flattening of the economic growth curve.

In an annual year-end statement the Dow executive noted that many forces would be at work opposing each other strongly. "Disposable income will undoubtedly be higher than ever," he said. "On the contrary, governmental credit policies are likely to have a restraining influence on mortgage and installment buying."

Prices, on the average, Mr. Doan feels, will hold about even or edge up slightly. Industry in general is feeling a profit squeeze as a result of increased costs, but the keenness of competition will tend to prevent other than selective price raises. Thus investors can expect to see lower profit margins recorded by most of their holdings. "Dow anticipates substantially larger sales," Mr. Doan said, "but we probably will be unable to hold net earnings at last year's level and we think most companies are in pretty much the same boat."

A possible decline in private building, Mr. Doan thinks, will be more than offset by increased industrial construction and public works and substantially greater federal expenditures.

In the net, Mr. Doan believes that 1957 will be a year of good business, hard fought for, and that the long range outlook is extremely favorable.

Continued economic growth will require more chemicals and new chemical products. Dow is expanding to help meet these needs. Major projects currently under way are a new general chemicals division near Baton Rouge, La., and a plant near Williamsburg, Va., for the manufacture of Dow's new synthetic fiber, Zefran. Both projects will carry over well into 1958.

COTTON COUNCIL SPEAKER

ST. LOUIS—Dr. Frank C. Croxton, technical director for chemistry and chemical engineering, Battelle Memorial Institute, Columbus, Ohio, will address the 19th annual meeting of the National Cotton Council here, Jan. 28-29. He will discuss industry's use of research in developing and expanding markets, speaking at the morning session, Jan. 29.

TIMBER SPRAYING

(Continued from page 1)

against blister rust which attack white pine (five needled pine). The hand sprayed 304,792 trees against bark beetles and used planes to spray 1,366,900 acres of timbered land infested with budworm. In addition they waged war on miscellaneous insects and diseases on 98,900 acres.

The control of blister rust involved the destruction of 12 million wild currant and gooseberry bushes of the ribes family which act as intermediary hosts and transmit the disease to the white pine. Most bushes are pulled by hand. In 1956, however, toxic chemicals were sprayed on 10,780 acres where the ribes were concentrated or the plants were too large for grubbing.

With some 4 to 5 million acres yet to be rid of ribes, Forest Service field units are continuously trying out different means of control. The foresters saved some 3,500 high-quality sugar pine trees in California by pruning blister rust cankers from them.

The main fight against blister rust is concentrated in the northern Rocky Mountains. It is also carried on in the Northeast, the Lake States and the states along the Pacific Coast.

The 1956 aerial spraying of the spruce budworm was largely on seriously infested areas of Montana, Idaho and New Mexico. Although substantial, last year's control work did not cover all infested forests.

Bark beetle infestations, which are fought by hand spraying of individual trees, were found largely in Colorado, Montana and the southeastern states.

Bruce M. Bare Heads Marketing for Atlas Chemical Division

WILMINGTON—Bruce M. Bare has been appointed marketing manager of Atlas Powder Co.'s chemicals division, the company announced Jan. 8.

Mr. Bare, a native of Mt. Pleasant, Pa., joined Atlas from the Dewey and Almy Chemical Co., where he served most recently as marketing manager of the organic chemical division. He was Chicago regional sales manager for Sharples Chemicals, Inc., for a five-year period following World War II, in which he served as a captain on the staff of the commanding general of the Seventh Bomber Command.

A graduate of Gettysburg College with a bachelor's degree in chemistry in 1936, Mr. Bare is a member of Phi Beta Kappa honorary fraternity.

Dr. John Paul Frawley Joins Hercules Powder

WILMINGTON, DEL.—The creation of a new post of toxicologist in Hercules Powder Co.'s medical department, and the appointment of Dr. John Paul Frawley of Washington, D.C. to fill the post, was announced recently by Dr. Lemuel C. McGee, Hercules medical director.

Dr. Frawley has served in the last seven years with the U.S. Food and Drug Administration, where for the past three years he has been assistant chief in the chronic toxicity branch.

Hercules medical department has long been responsible for maintaining controls on toxic materials handled by company employes, as well as research on toxicity of chemical materials manufactured by the company. All of this work has been done under contract to independent laboratories specializing in toxicology. The addition of Dr. Frawley to Hercules medical department will bring all such work under the direct supervision of the department, Dr. McGee said.

R. W. Cool — Robert H. Allard — Lee Fryer

PACIFIC AGRO

(Continued from page 1)

ples, pears, sugar beets, mint, strawberries, wheat, potatoes, cannery peas and cannery beans. The firm will also mix and sell a complete line of insecticides and farm chemicals.

Link Distributing Co. of Grandview, Wash. and Shur-Crop Corp. of Monroe, Wash. are handling manufacturing for the new company. These compânion firms are also serving as market bases for farm chemicals and fertilizers produced by Pacific Agro.

Directors of Pacific Agro Co., in addition to Mr. Cool, Mr. Allard and Mr. Fryer, include: M. V. Wolfkill, president of Shur-Crop Corp.; Alex Bleyhl, president, and Ray Whitcomb, general manager of Bleyhl's, Inc., and Link Distributing Co., Grandview; Charles Gelb, president of Spokane Garden Store, and J. D. Ehrlichman of Hullin and Ehrlichman, Seattle law firm.

rthur R. Burkette eads Portland Seed ertilizer Division

PORTLAND, ORE. — Arthur R. rkette has been named general nager of the fertilizer division of rtland Seed Co., tri-company seed, tilizer and garden supply organi- ion which includes Charles H. ly Co., Seattle and Inland Seed ., Spokane, it has been announced John C. Douglas, general sales nager.

Mr. Burkette has been manager of Charles H. Lilly Co. plant in lensburg, Wash. He was once pro- ction engineer with Todd's ship- rds, salesman for Union Oil Co. d Sherwin-Williams Co. and man- er of the fertilizer division of Gal- aith Co.

Plans are now being formulated, cording to officials of Portland ed Co., for the addition of new oducts to the line of Lilly ferti- ers, and for the 1957 dealer and nsumer promotion of Lilly's Or- nic Morcrop and other lawn, gar- n and farm fertilizers in the Lilly e.

Mr. Burkette, his wife and two ildren will move to Lilly's coast adquarters after he completes his ork in the Yakima-Ellensburg eas.

entucky Pesticide eeting Scheduled

LEXINGTON, KY. — The annual sticide meeting sponsored by the iversity of Kentucky department entomology and botany will be d at the Kentucky Agricultural periment Station Jan. 16. The rpose of this meeting is to inform distributors, formulators, aerial d custom spray operators as well the technical representatives from various chemical companies as the new techniques employed by experiment station in the con- l of insect pests.

W. A. Price, head, department of omology and botany, will open meeting at 9 a.m. Following this l be a showing of a film, "The al World," produced by the Shell emical Co.

The remaining portion of the mor- g's program will include short ks concerning the registration l labeling of insecticides, methods applying insecticides, a discussion the use of granular insecticides, l a discussion of the Japanese tle problem in Kentucky. The ount of damage done by insect ts and a talk on the control of sehold insects is also included in morning program.

Following lunch the members of experiment station staff will dis- s the recommendations for insect trol in 1957 on livestock, tobacco, n, legumes, fruit and vegetables. addition to a discussion on the trol of bluegrass plant bug and d control, a report on the experi- ntal work completed this past mer will be summarized.

C. Totman Majority or Leader in Maine

BANGOR, MAINE—James C. Tot- n, vice president of Northern mical Industries and manager of mers Fertilizer Company's Ban- office, has been elected majority leader of the Maine House of resentatives. At the first of the , he began his fourth two-year n as state representative from city of Bangor.

uring the past year, Mr. Totman active on the state's highway ty committee, and in this work appeared frequently on radio television programs. Maine was of three states in the entire coun- having no highway fatalities dur- the past holiday season.

Firm to Feature Helicopter Dusting

PASO ROBLES, CAL.—Crop dusting by helicopter is the specialty of a new agricultural aircraft service founded during the late autumn in this central California community.

Coastal Helicopters of Paso Robles is the recently organized division of Fresno Helicopters, Fresno, Cal., and features a $32,000 helicopter to be used for farm and ranch work, and a second helicopter during busiest seasons. General manager of the aircraft firm is Harry Rogers. Gordon Bower is local manager in Paso Robles, and Ron Smith is sales manager.

Agricultural Aircraft Industry Shows Healthy Growth in Far Western States

SAN FRANCISCO — Agricultural aircraft is developing into a big business in California and other western states.

Until a few years ago, only a handful of crop raisers sought out the airplane as an adjunct to their farming methods, but more and more are employing air craft for such common farm practices as spraying of insecticides, fertilizing soils and seeding.

The demand has become so heavy that during 1955 more than seven million acres of crop and pasture land were served for one means or another by the airplane—and it is expected that the 1956 total will go far beyond that figure.

One reason for the new increase is the further development of the spraying of timber land by airplane, the newest "crop" to look to the air. In three other western states where lumbering is important—Oregon, Washington and Idaho—control of the damaging spruce bud moth is credited to the agricultural aircraft industry. Many thousands of acres of forestland have in the past fallen prey to this dreaded insect, until chemicals were sprayed over the timber by crop dusting planes.

California participated in an experiment last year in which some 10,000 acres of forest in the Yosemite area were sprayed for insect infestation, and the acreage is expected to increase substantially during 1957 and 1958 because the experiments were termed "highly successful" by the state department of agriculture.

At the present time there are an estimated 150 agricultural aircraft pilots licensed in the state, and together they own about 1,200 airplanes. But this number will increase, and new companies are being formed.

Among the newest of the servicing companies is one called Crop Care, founded during the late autumn in Sacramento. Crop Care is an outgrowth of the Branstetter Flying Service of Sacramento, and is believed to be the first company of its kind to sell shares of stock on the open market.

Some 150,000 shares at a value of $2 apiece have been offered for sale by this company. Before the end of 1957 Crop Care expects to maintain a fleet of some 30 airplanes operating throughout California and other states to treat both forest and crop lands.

Farm experts have termed the industry as "the fastest growing" of the industries allied to agriculture, in part because of the increasing demand nationally for natural resources and the need for more food and better conservation methods.

AT CREST FERTILIZER PLANT DEDICATION—Gov. Joe Foss of South Dakota was one of the distinguished visitors at the dedication of Crest Fertilizer Company's new plant at Watertown on Jan. 5. He is shown above (at left) with Marlowe A. Sharf, president of Crest. Below is a view of the new plant which will employ some 30 persons at peak operation, and seven on a full-time basis. The building is 187 x 100 x 65 ft. at its maximum measurements. It is constructed of concrete, concrete blocks and galvanized metal. The Great Northern Railway built a 1,900-ft. siding to the plant to facilitate loading and unloading of freight cars. The plant will produce high analysis granular fertilizers.

New South Dakota Fertilizer Plant Starts Operations With Watertown Ceremonies

WATERTOWN, S.D.—Crest Chemical Co. dedicated its new fertilizer mixing plant here Jan. 5, with ceremonies in which government officials, state college representatives and farmers from the area participated.

Marlowe A. Sharf, president of the company, said that the new plant, the only one of its type in northeastern South Dakota, was established to fulfill the "increasing demand in this area for fertilizer." Market area for the firm will comprise the eastern Dakotas and western Minnesota, he said.

Speakers on the dedication program included Gov. Joe Foss of South Dakota and W. W. Worzella, head of the department of agronomy at South Dakota State College, Brookings.

At a pre-dedication dinner party at Watertown, John W. Headley, president of South Dakota State College told a group of 75 guests that "we must figure how to increase production . . . the prospect is not one of having too much." He presented statistics on population which reminded the audience that the U.S. population is expected to reach as much as 221 million in 1975, which means that farm production must be increased by one-third to meet the demand for food and fiber by that time.

Mr. Sharf, president of the fertilizer company, introduced other members of the organization to the crowd. These included Harry Danielson, sales manager; Tom Meylor, plant superintendent, and Kenneth Kalberg, plant foreman.

Oregon Crop Output At New High in 1956

PORTLAND—Oregon's 1956 output of vegetables, berries, field and seed crops and nuts established a new record high of 5,310,000 tons despite the fact plants were subjected to adverse weather during 1955's late fall months. This was revealed by the general crop report of Ray B. Hile, agricultural statistician in charge of the Oregon office of the U.S. Department of Agriculture Crop & Livestock Reporting Service.

Mr. Hile said that the 1956 total betters the 1955 output of 4,740,000 tons by 12% and the 10 year average by some 16%. The previous high mark was established in 1953 with 4,978,000 tons of the principal crops.

Value of Beaver state crop production was estimated at $267,330,000 based on prices received for quantities sold up to Dec. 1. This is 8% over the 1955 value of $247,392,000. The 1956 value of field crops was 14% above the previous year and vegetables 22% above, mostly due to a larger production volume.

Somewhat offsetting was the lower total values shown for reduced fruits, nuts and seed crops tonnages. The 1956 value of tree fruits, nuts and berries combined was 8% below 1955 while seed crops value was down 2%.

MORE GRASS AND TREES

BLACKSBURG, VA. — Farmers in Virginia's 29 soil conservation districts converted more than 28,000 acres of cropland to grass and trees in 1955, according to S. W. Bondurant, Virginia conservationist for the U.S. Soil Conservation Service.

Croplife®

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

FOR 1957 SEASON . . .

Better Marketing Seen as Key to Success

With the pesticide industry having just completed a successful year's operation, all eyes are now focused on the path lying ahead in 1957. What kind of new marketing procedures can be employed to step up the over all use of insecticides, weed killers, fungicides, rodenticides, and the other chemical products that can mean money to the farmer once he learns how to use them well?

We claim to see no farther into the mists of this new year than the next fellow, but a few factors seem to stand out as having significant bearing on the situation. Of these, one of the most important to consider is the user of pesticidal products . . . the grower who is the final consumer. The other factor is the dealer who carries the responsibility of telling the ultimate user about these chemical products, then selling him on the idea that there is profit in their use.

As was stated in an earlier editorial on this page, the technical progress made by the industry must be matched by an upsurge of emphasis on marketing at all levels of production and manufacturing. It calls for increased amounts of information to get through to both dealers and users, and greater attention to the positive side of merchandising. It all works together, for a lack of movement of goods at any level will stop the flow from factory to farm, regardless of the reason.

Along this line, it seems appropriate to recall some of the remarks made at the Canadian Agricultural Chemicals Assn. meeting last fall, in which an Ontario farmer aired some of his personal criticism of chemicals and told the group why he did not use more of these products.

His plea, it may be recalled, was that farmers make mistakes in applying weed killers or insecticides largely because of ignorance on their part, as to how these materials should be used.

The importance of service on the part of the dealer who sells him the goods was emphasized by this farmer, whose observations may be typical of some situations. He said that few farmers will take the trouble to write in for government bulletins on good farming practices, and agricultural agents lack the time to instruct all the growers in their areas. As a result, farmers act largely in accordance with what their neighbors are doing, and must depend upon their dealers for information of specific nature.

That there is a great deal of educational work to be done on both the dealers and the growers, was brought out in one observation by this lukewarm agricultural chemical user. "If the farmer could be made to realize the dollars and cents advantages of spraying, he would be far more willing to do more spraying.

"This lack of knowledge has soured many a farmer on the results of spraying. The first year I sprayed my grain crops, I obtained only a 40-50% kill. Many men, with their first year's spraying have had similar results. Naturally, the conclusion drawn is that the spray is poor, because the weeds are still there. It only takes one or two dissatisfied farmers in an area to keep others from trying. However, if the same men had had the advice of a competent firm or its fieldmen and obtained good results, others would have followed this lead. Good spraying practice is contageous!"

We have a lot of confidence in the dealers around the country who handle these chemical products for controlling weeds, insects, plant diseases and rodents. This group is growing in stature every day, and is learning that dealer profits can be increased through an emphasis on service to the user.

Just a little additional attention to this detail may bring amazing results. If a dealer can build up a good following of satisfied farmer customers, the firm's good reputation will grow right along with the important word-of-mouth advertising that farmers give out in their conversations with each other.

Thus, the concept of an integrated industry brings us into the 1957 season with an added appreciation of how critically important it is to emphasize service and educational efforts all the way through the marketing chain, from factory to farm.

Its importance can hardly be exaggerated.

"Agribusiness" Offers New Concept of Farming

Pacific Northwest farm and business leaders will have to team together and attack the so-called farm problem on an "agribusiness" basis if the region's agriculture is to be at its best, John H. Davis, former president of the United States Department of Agriculture's commodity credit corporation, told the Portland (Oregon) Chamber forum at a recent meeting.

"By this I mean that the food and fiber phase of our economy must be analyzed in its total setting—simultaneously taken into account the related functions taking place both on and off the farm," Mr. Davis declared. "In general, leaders of food and fiber phases of our economy have been slow to comprehend the magnitude of the evolutionary forces which are converting agriculture into agribusiness and farm problems into agribusiness problems."

Mr. Davis, now director of the program in agriculture and business for Harvard university graduate school of business administration, emphasized that the real answer to farm problems and agribusiness problems is progress—progress in harmony with the dictates of science and technology.

Are We Sub-Dividing Into Higher Food Prices?

"We're sub-dividing ourselves right out of food-producing land," states Louis A. Wolfanger, Michigan State University researcher in soil science and resource development. "And furthermore, we're likely to sub-divide ourselves right into higher food prices," he continues.

Sub-dividing in the nation is gobbling up more than one million acres each year, he points out, and those million acres of good food-producing areas are being converted to gas and water pipelines, septic tanks, homes, highways and factories.

Every time a new septic tank is dropped into a hole it's usually on some of our finest agricultural land, the Michigan State scientist observes.

Mr. Wolfanger expressed doubt that the nation has become fully aware of this growing demand for converting good food land to home sites.

We think that this observer has a good point there. If what he says is true—and it undoubtedly is true—then the continuing urbanization of our nation will serve to intensify farming more and more. This, in turn, will dictate the necessity of using every possible means to increase yields per acre on the remaining agricultural land. More fertilizers, more pesticides.

Croplife

BPA — *Member of Business Publications Audit*

NBP — *Member of National Business Publications*

CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is $5 for one year ($8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG
Editor

DONALD NETH
Managing Editor

EDITORIAL STAFF — John Cipperly, Washington Correspondent; George E. Swarbreck, Canadian and Overseas Editor; Emmet J. Hoffman, Merchandising Editor; Walter C. Smith, Research Director.

ADVERTISING STAFF—Wilfred E. Lingren, Advertising Director; Carl R. Vetter, Advertising Production Manager; Bruce A. Kirkpatrick, Assistant Advertising Production Manager.

BUSINESS STAFF—Carroll K. Michener, Chairman of the Board of Directors; Harvey E. Yantis, President; Milton B. Kihlstrum, Executive Vice President and Treasurer; Martin E. Newell, Vice President; Don E. Rogers, Vice President; Wilfred E. Lingren, Secretary; Thomas A. Griffin, Business Manager; Edwin J. Hartwick, Circulation Manager; James G. Pattridge, Assistant Treasurer; Richard Ostlund, Office Manager; W. O. Buchkosky, Production Superintendent.

BRANCH OFFICES

EASTERN STATES—Paul L. Dittemore, Eastern Advertising Sales Manager; James W. Miller and George W. Potts, Advertising Sales Representatives; Suite 3214, 551 Fifth Ave., New York 17, N.Y. (Tel. Murray Hill 2-2185).

CENTRAL STATES—Don E. Rogers, Manager; Henry S. French, Assistant Manager; 2272 Board of Trade Bldg., 141 W. Jackson Blvd., Chicago 4, Ill. (Tel. Harrison 7-6782).

SOUTHWEST—Martin E. Newell, Manager; Thomas E. Letch, Assistant Manager; 612 Board of Trade Bldg., Kansas City 5, Mo. (Tel. Victor 2-1350).

NORTHWEST—Paul A. Anderson, Advertising Sales Representative, P.O. Box 67, Minneapolis 1, Minn. (Tel. Federal 2-0575).

WASHINGTON CORRESPONDENT — John Cipperly, 604 Hibbs Bldg., Washington, D. C. (Tel. Republic 7-8534).

EXECUTIVE AND EDITORIAL OFFICES — 2501 Wayzata Blvd., Minneapolis, Minn. Tel. Federal 2-0575. Bell System Teletype Service at Minneapolis (MP 179), Kansas City (KC 295), Chicago (CG 340), New York (NY 1-2452), Washington, D.C. (WA 82).

Published by
THE MILLER PUBLISHING CO.
2501 Wayzata Blvd., Minneapolis, Minn.
(Address Mail to P. O. Box 67, Minneapolis 1, Minn.)

Associated Publications—THE NORTHWESTERN MILLER, THE AMERICAN BAKER, FEEDSTUFFS, MILLING PRODUCTION

MEETING MEMOS

Jan. 15-16—Georgia Plant Food Educational Society, Fourth Annual Meeting, University of Georgia, Athens, Ga., Joint Meeting with Georgia Section, American Society of Agronomy.

Jan. 15-16—Nebraska Fertilizer Institute, Inc., College of Agriculture, University of Nebraska, Lincoln. Howard W. Elm, 917 Trust Bldg., Lincoln, Neb., executive secretary.

Jan. 15-17—North Carolina Pest Control Operators' Short Course, College Union, Raleigh, N.C. Clyde F. Smith, head, Dept. of Entomology.

Jan. 16-17—Shell Nematology Workshop, Biltmore Hotel, New York, Max M. Lowish, Shell Chemical Corp., 460 Park Ave., New York 22, N.Y.

Jan. 17—Second Annual Western Oregon Fertilizer Dealers Meeting, Withycombe Hall, Oregon State College, Corvallis, Ore.

Jan. 21-25—Pacific Northwest Vegetable Insect Conference and Northwest Cooperative Spray Project, Imperial Hotel, Portland, Ore.

Jan. 22-24—California Weed Conference, Fresno Memorial Auditorium, Fresno, Cal. Conference headquarters, Hotel Californian.

Jan. 23-24—Fourth Annual Pacific Northwest Agricultural Chemicals Industry Conference, Benson Hotel, Portland, Ore., Sponsored by Western Agricultural Chemicals Assn., C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Executive Secretary.

Jan. 23-24—Fertilizer and Lime Salesmen's Conference, Pennsylvania State University, State College, Pa.

Jan. 23-25—Southern Weed Conference, Bon Aire Hotel, Augusta, Ga.; Walter K. Porter, Jr., Agricultural Experiment Station, Louisiana State University, Baton Rouge, secretary.

Jan. 24-25—Illinois Custom Spray Operators' School, Illini Union, University of Illinois campus. H. B. Petty, extension entomologist.

Jan. 25—Colorado Agricultural Chemicals Assn., Annual Meeting, Cosmopolitan Hotel, Denver, Frank J. Randall, the C. D. Smith Co., P.O. Box 839, Grand Junction, Colo., Secretary-Treasurer.

Jan. 28-29—National Cotton Council of America, Annual Meeting, St. Louis, Mo.

Jan. 31-Feb. 1-2—Agricultural Aircraft Assn., Annual Convention, Californian Hotel, Fresno, Cal., Wanda Branstetter, Route 3, Box 1077, Sacramento, Executive Secretary.

Feb. 4-6—Cotton States Branch, Entomological Society of America, Birmingham, Ala. W. G. Eden, secretary-treasurer, Alabama Polytechnic Institute, Auburn, Ala.

Feb. 13-15—Midwestern Chapter, National Shade Tree Conference, Pfister Hotel, Milwaukee; N. B. Wysong, 536 N. Harlem Ave., River Forest, Ill., secretary-treasurer.

Feb. 14-15—Middle West Soil Improvement Committee, Edgewater Beach Hotel, Chicago. Zenas H. Beers, 228 N. LaSalle St., Chicago, executive secretary.

Feb. 19-20—Alabama Pest Control Conference and First Annual Meeting of the Alabama Association for the Control of Economic Pests, Auburn, Ala., W. G. Eden, Alabama Polytechnic Institute, Auburn, secretary-treasurer.

March 5-6—Western Cotton Production Conference, Hotel Westward Ho, Phoenix, Ariz.

March 6-8—National Agricultural Chemicals Assn., Spring Meeting, Fairmont Hotel, San Francisco, L. S. Hitchner, 1145 19th St. N.W., Washington, D.C., Executive Secretary.

March 11-12—Southwestern Branch, Entomological Society of America, Annual Meeting, Gunter Hotel, San Antonio, Sherman W. Clark, 811 Rusk Ave., Houston 2, Texas, Secretary-Treasurer.

March 27-29—North Central Branch of Entomological Society of America, Annual Meeting, Des Moines, Iowa.

April 2—Western Agricultural Chemicals Assn.; Spring Meeting, Hotel Biltmore, Los Angeles, Cal.; C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., executive secretary.

June 9-12—National Plant Food Institute, annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 17-19—Fifteenth Annual Convention of the Association of Southern Feed and Fertilizer Control Officials, Dinkler-Tutwiler Hotel, Birmingham, Ala., Bruce Poundstone, Kentucky Agricultural Experiment Station, Lexington, Ky., Secretary-Treasurer.

June 23-26—American Society of Agricultural Engineers, Golden Anniversary meeting, Michigan State University, East Lansing, Mich.

June 26-28—Eighth Annual Fertilizer Conference of the Pacific Northwest, Benson Hotel, Portland, Ore. B. R. Bertramson, Washington State College, Pullman, Wash., chairman.

July 17-19—Southwestern Fertilizer Conference and Grade Hearing, Galvaz Hotel, Galveston, Texas.

Oct. 2-4—Eleventh annual Beltwide Cotton Mechanization Conference, Shreveport, La.

T. M. Scruggs | L. E. Pounders | Ray P. Perry | F. C. Chenault

BEMIS BRO. RETIRING TWO—Bemis Bro. Bag Co. has announced that two of its veteran executives have retired. They are T. M. Scruggs, manager of the firm's Visinet mill at St. Louis, and F. C. Chenault, manager of the Memphis plant and sales division. Mr. Scruggs was in charge of the Visinet mill, which produces open-mesh woven paper fabrics, since it was opened in 1929. He joined Bemis in 1916 at St. Louis and was superintendent at the Seattle plant from 1920 until given his present duties. Mr. Scruggs will be succeeded by Ray P. Perry, a Bemis employee since 1946, according to an announcement by A. H. Clarke, vice president in charge of production. Mr. Chenault has been with Bemis more than 40 years, having joined as a salesman at Memphis in 1916. He was made plant superintendent in 1918, sales manager in 1932 and manager in 1947. Mr. Chenault will be succeeded by L. E. Pounders, now assistant manager at Memphis. Mr. Pounders has been with Bemis since 1936. Announcement of the change was made jointly by Judson Bemis, executive vice president, and H. J. Wehrenbrecht, director of southern operations.

Vast Chemical Industry Resources Exist in West, Conference Hears

SAN FRANCISCO—Vast potential agricultural chemical resources exist in the western states, according to Richard M. Stewart, mining geologist with the California Division of Mines.

Mr. Stewart addressed the Chemical-Mining Inter-Industry Conference at the Fairmont Hotel in San Francisco. He said that minerals are basic not only to the chemical industry but also to the entire economy of the nation.

He went on to report that phosphoria formations underlie many square miles in Utah, Wyoming, Montana and Idaho. "The electric furnace production of elemental phosphorus, the growth of phosphate fertilizer plant capacity and development of transportation have tremendously stimulated the production of phosphate rock," Mr. Stewart said.

Extensive deposits of gypsum and anhydrate exist in parts of the western states, he said, and they constitute a big source for agricultural chemical use.

Fred Lohse, with the chemical division of Kaiser Aluminum and Chemical Corp. of Oakland, told the group that the full significance of the electric furnace method of producing elemental phosphorus from low-grade phosphatic rock and shale was still unappreciated by most persons in the industry. He said any new reserves found closer to large agricultural land areas could be still more important.

COTTON MEETING

COLLEGE STATION, TEXAS—A meeting of the insect and disease and cotton product sections of the Statewide Cotton Committee of Texas will be held here Jan. 17.

ELEVATORMEN TO MEET

MINNEAPOLIS—The 27th annual meeting of the Northwest Country Elevator Assn. will be held at the Radisson Hotel here Jan. 27.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge $2.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Advertisements of new machinery, products and services accepted for insertion at minimum rate of $10 per column inch.

All Want Ads cash with order.

HELP WANTED

A number of openings are available in our Agricultural Chemical Technical Sales Service Department, working with fertilizer manufacturers. B.S. degree in chemistry, chemical engineering, agriculture or agronomy required.

Experience in fertilizer or allied industries desirable.

Excellent growth opportunities.

Mr. P. W. Bauman
MONSANTO CHEMICAL CO.
710 N. 12th Blvd., St. Louis 1, Mo.

Industry Gifts to California School Listed

BERKELEY, CAL.—A soil fungicide screening program is underway on the Riverside campus of the University of California largely as the result of a donation of $3,300 given by the Olin Mathieson Chemical Corp. during October.

This gift was the largest of four grants made to the University during that month and of four other grants of various types of chemicals.

The Rohm and Haas Co. gave $600 for research on control of mites attacking agricultural crops generally, a study being conducted on the main campus at Berkeley. Gerber Products Co. presented $500 for a study on the Davis campus on the chemical thinning of apples in the Watsonville area, and the fourth gift was made by the Zonolite Co. in the amount of $250 for a study on the same campus on the control of insects through the use of solid carriers of toxicants applied to either the soil or the seed.

Assisting in other studies with gifts of agricultural chemical products were Shell Chemical Corp., for research on metabolism of insecticides in insects; Allied Chemical and Dye Corp., for experimental work on range fertilization, and two grants by the Stauffer Chemical Co. for soil fungicide tests on avocado root rot and for water penetration studies.

INDEX OF ADVERTISERS

Adams & Doyle Eqpt. Mfg. Co.	17	Kraft Bag Corp.	
African Pyrethrum Development Co.	3	Meredith Publishing Co.	
Allied Chemical & Dye Corp., Nitrogen Division		Miller Publishing Co., The	12
American Potash & Chemical Corp.	5	Mississippi River Chemical Co.	
American Potash Institute	13, 14, 15, 16	Monsanto Chemical Co.	
Anco Manufacturing & Supply Co.		National Potash Co.	
Armour Fertilizer Works		Naugatuck Chemical Div., U. S. Rubber Co.	
Ashcraft-Wilkinson Co.		Niagara Chemical Division, Food Machinery & Chemical Corp.	
Atkins, Kroll & Co.	8	Nitroform Agricultural Chemical, Inc.	21
Baughman Manufacturing Co., Inc.		Nitrogen Div., Allied Chemical & Dye Corporation	
Beaird, J. B., Co.		Olin Mathieson Chemical Corp.	
Bemis Bro. Bag Co.	4	Penick, S. B., & Co.	
Blue, John, Co.		Pennsylvania Salt Mfg. Co. of Washington	
Bonneville, Ltd.		Phillips Chemical Co.	11
Bradley & Baker		Potash Company of America	
Broyhill Company	2	Private Brands, Inc.	
Butler Manufacturing Co.		Shell Chemical Corp.	
Chase Bag Co.	2	Sinclair Chemicals, Inc.	
Commercial Solvents Corp.		Smith-Rowland Co., Inc.	
Davison Chemical Co.		Spencer Chemical Co.	
Deere & Co., Grand River Chem. Div.	19	Spraying Systems Co.	6
Douglas Chemical Company		Stauffer Chemical Co.	
E. I. du Pont de Nemours & Co., Inc.		Successful Farming	
Eastern States Chemical Corp.	7	Tennessee Corp.	23
Farm & Ranch		Union Bag-Camp Paper Corp.	
Flint Steel Corporation		U. S. Phosphoric Products Division	23
Grand River Chemical Div. of Deere & Co.	19	U. S. Potash Co.	
Hahn, Inc.		U. S. Rubber Co., Naugatuck Chem. Div.	
Hough, Frank H., Co.		U. S. Steel Corp.	
Industrial Fumigant Co.		Velsicol Chemical Corp.	
International Minerals & Chemical Corp.		Virginia-Carolina Chemical Corp.	
Johns-Manville Corp.			

A Complete Sales Medium...

CROPLIFE is the only *complete sales medium* directed to the agricultural chemical industry. It is a *weekly* newspaper appealing to all segments of the industry. One of its editorial functions is to knit more closely together all those industry elements—manufacturers, agents, retailers, the educational echelon and farm advisor groups. It does this by:

- Keeping all segments informed of all industry news.
- Providing feature material designed to help manufacturers and mixers to do a better job, to help dealers sell and to help farm advisors and educational people make sound recommendations.
- Keeping all industry alert to current and proposed government action.
- Providing a channel through which news and advertising can reach all segments of the industry.

This new approach to business journalism for the agricultural chemical industry is being made by a company with 80 years of experience in newsgathering and publishing and one which has built an unchallenged reputation for reliability and service. Advertising of your products and services in Croplife will mean *richer sales fields* for you!

National Coverage Weekly . . .

Croplife's carefully controlled circulation provides national weekly coverage of manufacturers, formulators, mixers and ingredient suppliers.

Plus Regional Coverage by Crop-areas . . .

In addition, a unique regional circulation plan provides advertisers with a selective crop-area coverage of wholesale and retail dealers and farm advisory personnel.

In addition to its national coverage, Croplife offers a selective regional circulation plan in these crop areas

WRITE—WIRE—PHONE our nearest office for a complete analysis of Croplife's important role in your advertising program.

BPA
Member of Business Publications Audit

Croplife

. . . for richer sales fields

published by **The Miller Publishing Co.**

NBP
Member of National Business Publications

NEW YORK
551 Fifth Ave.
MUrray Hill 2-2185

CHICAGO
2272 Board of Trade Bldg.
HArrison 7-6782

KANSAS CITY
612 Board of Trade Bldg.
Victor 2-1350

MINNEAPOLIS
2501 Wayzata Blvd.
FEderal 2-0575